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# CATALOGUE

OF

# TUFTS COLLEGE

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# Calendar.

## 1894.

| | | |
|---|---|---|
| SEPT. | 20. | College year begins, Thursday morning. |
| SEPT. | 23. | Russell Lecture, Sunday, 3 P. M. |
| NOV. | 1. | Limit of time for applying for Scholarships. |
| DEC. | 19. | Christmas recess begins, Wednesday evening. |

## 1895.

| | | |
|---|---|---|
| JAN. | 2. | Christmas recess ends, Wednesday evening. |
| FEB. | 9. | End of first half year, Saturday. Plans of study for the second half-year must be reported before noon of this day. |
| FEB. | 11. | Second half-year begins, Monday. |
| MARCH | 30. | Spring recess begins, Saturday evening. |
| APRIL | 7. | Spring recess ends, Sunday evening. |
| MAY | 28. | Prize Reading in the College of Letters. |
| JUNE | 4. | Prize Reading in the Divinity School. |
| JUNE | 14. | Class Day, Friday. |
| JUNE | 16. | Baccalaureate Sermon, Sunday, 3 P. M. |
| JUNE | 19. | Thirty-ninth Annual Commencement, Wednesday. |

*First Examinations for Admission to College of Letters.*

| | | |
|---|---|---|
| JUNE | 20. | Algebra, 9 to 10.30 A. M.<br>English, 10.30 A. M. to 12.30 P. M.<br>Arithmetic and Plane Geometry, 2 to 4 P. M.<br>Physics, 4 to 5 P. M. |
| JUNE | 21. | Latin and Advanced Mathematics, 9 to 11 A. M.<br>Elementary German and French, 11 A. M. to 12.30 P. M.<br>History, 2 to 4 P. M.<br>Chemistry, 4 to 5 P. M. |
| JUNE | 22. | Greek and Intermediate or Advanced German, 9 to 11 A. M.<br>Natural History (two subjects), 11 A. M. to 1 P. M. |

## SUMMER VACATION, THIRTEEN WEEKS.

*Second Examinations for Admission to College of Letters.*

| | | |
|---|---|---|
| SEPT. | 17. | Algebra, 9 to 10.30 A. M. |
| | | English, 10.30 A. M. to 12.30 P. M. |
| | | Arithmetic and Plane Geometry, 2 to 4 P. M. |
| SEPT. | 18. | Latin and Advanced Mathematics, 9 to 11 A. M. |
| | | Elementary German and French, 11 A. M. to 12.30 P. M. |
| | | History, 2 to 4 P. M. |
| SEPT. | 19. | Greek and Intermediate or Advanced German, 9 to 11 A. M. |
| | | Natural History (two subjects), 11 A. M. to 1 P. M. |
| | | Physics, 2 to 3 P. M. |
| | | Chemistry, 3 to 4 P. M. |

| | | |
|---|---|---|
| SEPT. | 19. | College Year begins, Thursday morning. |
| | | Registration of all students at Secretary's office. |
| | | Major departments and plans of study for the first half-year must be reported before noon of this day. |
| SEPT. | 21. | Regular College exercises begin. |
| SEPT. | 22. | Russell Lecture, Sunday, 3 P. M. |
| DEC. | 18. | Christmas Recess begins, Wednesday evening. |

### 1896.

| | | |
|---|---|---|
| JAN. | 1. | Christmas Recess ends, Wednesday evening. |

TUFTS COLLEGE is situated at College Hill, four miles from Boston, on the Lowell division of the Boston & Maine Railroad. The post-office address is — TUFTS COLLEGE, MASS.

# Tufts College.

TUFTS COLLEGE was founded under a charter granted April 21, 1852. Like so many of the endowed colleges of the country, it owed its beginnings primarily to the need of an educated ministry, felt by an important body of Christians. Its work has, however, always been non-sectarian, a fact amply shown by the membership of its Faculty and student body. The aim of its instruction has been always the pursuit of truth.

After much consideration the work of raising a fund of one hundred thousand dollars for its foundation was undertaken, under the direction of the Rev. OTIS A. SKINNER, of Boston. About sixty thousand dollars was obtained in money. SYLVANUS PACKARD gave his bond for twenty thousand dollars additional, and CHARLES TUFTS gave twenty acres of land on Walnut Hill, embracing the present site of the College. Mr. Tufts announced his intention of increasing his gift of land to more than one hundred acres, and thus became the largest benefactor of the young institution, which accordingly received his name. Mr. Packard was a Boston merchant, who from the beginning made the College a peculiar care. Dying, he bequeathed to it his entire fortune, this being the largest gift it has yet received from a single person. Among other benefactors deserving mention, associated with those who may be styled the founders of the College, were OLIVER DEAN, who gave it ninety thousand dollars, and THOMAS A. GODDARD, whose gifts, though unobtrusive, were constant, and whose widow has continued the generosity of her husband. Dr. WILLIAM J. WALKER came soon after, with gifts and bequests amounting to nearly three hundred thousand dollars.

Students were first formally admitted in 1855. The only building at that time was the main College building, now known as Ballou Hall. The next building to be erected was a small brick dormitory, now the Library building. The large dormitory known as East Hall was the next addition to the group, and there was no other until in 1872 West Hall was opened to students. It was ten years before building operations were renewed by the College. The original Faculty numbered five. The first class, of three members, graduated in 1857.

At the outset, provision was made only for a course of study leading to the degree of Bachelor of Arts. The only feature of its work peculiar to Tufts College in these years of its beginnings was the attention given to the study of history. The first President of the College, the Rev. HOSEA BALLOU, 2d, D. D., was likewise Professor of History and of Intellectual Philosophy, and gave instruction in history remarkable alike for its quantity and quality, at a time when the study was hardly recognized in American colleges. Four hours a week for three years was the time assigned to this subject in the curriculum of Tufts College, until the death of President Ballou, in 1861, when, there being no one to take up the work, it dropped from the course.

Dr. Ballou was succeeded in the Presidency by the Rev. ALONZO AMES MINER, D. D., LL. D., who was inaugurated in 1862, and continued in office until 1875, resigning in February of that year. Some unclassified students had always been in attendance at the College, and in 1866 the degree of Bachelor of Philosophy was offered to those who should pursue a prescribed course of two years, the object being to provide for those who had been prepared only in English subjects. This course was maintained until 1875, when it was changed to a course of four years. The requirements for admission were then made the same as for the regular course, except that Greek as a condition of entrance was omitted, and an amount of work in French or German, considerably less than its equivalent, was substituted.

The will of Mr. Packard required that a professor of Christian Theology should be maintained from the income of funds bequeathed by him. The Rev. THOMAS J. SAWYER, D. D., was elected Packard Professor in 1869. This was the beginning of the Divinity School. In 1882, the school had developed so that its Faculty received a definite organization and Dr. Sawyer became the first Dean, retaining the office until his retirement as Packard Professor Emeritus in 1892. He was succeeded by the present Dean, the Rev. CHARLES H. LEONARD, D. D. From the erection of West Hall until the completion of the separate buildings of the school, the western side of West Hall was occupied by the Divinity School. In 1892, by the gift of Ex-President Miner, the school was provided with a convenient and handsome building, Miner Hall, containing the library, class-rooms, chapel, and reception room; and at the same time, largely through the efforts of the Dean of the School, the money was obtained to build Paige Hall, a dormitory for students of the Divinity School.

The Engineering courses were begun in 1869 with a department of Civil Engineering. The great development of electrical science was promptly recognized, and a department of Electrical Engineering was opened to students in 1882, a professorship in the subject being established in 1890. This side of the college work had a very rapid development, and this year the field has been still farther broadened by the addition of a course in Mechanical Engineering. In these courses an effort has always been made to provide facilities for thorough practical training. The will of the late HENRY B. PEARSON, founding the Bromfield-Pearson High School, and putting it in the hands of the Trustees of Tufts College to administer, provided a thoroughly equipped building for technical instruction, of great value in the drawing, carpentry, machine, and forge work, so important to the engineer in any branch. The Bromfield-Pearson building was completed in the fall of 1894.

In March, 1875, the Rev. ELMER HEWITT CAPEN, D. D., was elected to the Presidency of the College, vacated by the resignation of President Miner, and he was inaugurated on the second day of June. In 1883 the late PHINEAS T. BARNUM gave fifty-five thousand dollars for the establishment of the Barnum Museum of Natural History, and by his last will he bequeathed forty thousand dollars more. The main Museum building was completed in 1884. The west wing, containing the new biological laboratories, was erected in 1894. The years 1882 and 1883 saw also the completion of the Goddard Chapel, a monument of architectural beauty, given by Mrs. MARY T. GODDARD as a memorial of her husband, the first treasurer of the college, and of the Goddard Gymnasium, a gift from the same source. Dean Hall, a new dormitory, made necessary by the growth of the college, was erected in 1887 from funds bequeathed by the late OLIVER DEAN.

In 1891 a new course of study, leading to the degree of Bachelor of Arts, was offered for the first time, with an entrance requirement, believed to be fully the equivalent of the Greek, in two modern languages. This was one important step taken by the College towards the broadening of its opportunities. There had been a steady growth for many years in the amount of work done and in the number of departments of learning represented. Instead of the five members of the corps of instruction at the opening of the College, the catalogue of 1893-4 showed a body of active instructors, exclusive of the Divinity and Medical Schools, numbering twenty-seven, and offering subjects aggregating 113 and divided into twenty-two departments, exclusive of the Engineering Courses proper. This made it possible to put in operation the present plan of work, which is believed to be an approach to a rational co-ordination of the College and the University systems. Two new departments were instituted in 1892, in response to the tendencies of educational development — Biology and History. The entire staff engaged in the work of instruction in all departments numbers seventy.

In the summer of 1892 the College was by vote of the Trustees opened in all its departments to women on the same terms as to men. Nine women registered in all departments in the fall of that year. There was opened for the women students at the beginning of the present College year, Metcalf Hall, the gift of Mr. ALBERT METCALF, of Newton. This year has also seen the addition to the material equipment of the College of a hall containing students' rooms and a dining hall, and the Chemical Building.

In the summer of 1893 it was decided to open the Tufts College Medical School. This department has enjoyed in the year of its existence an encouraging growth in the number of its students and in the possibilities of its work.

# The College Charter.

SECTION 1. B. B. Mussey, Timothy Cotting, Richard Frothingham, Jr., their associates and successors, are hereby constituted a body corporate by the name of the Trustees of Tufts College, in Medford, and they and their successors, and such as shall be duly elected members of said corporation, shall be and remain a body corporate by that name forever. And for the orderly conducting of the business of said corporation, the said Trustees shall have power and authority, from time to time, as occasion may require, to elect a President, Vice-President, Secretary, and Treasurer, and such other officers of said corporation as may be found necessary, and to declare the duties and tenures of their respective offices; and also to remove any Trustee from the same corporation, when, in their judgment, he shall be rendered incapable, by age or otherwise, of discharging the duties of his office, or shall neglect or refuse to perform the same; and also, from time to time, to elect new members of the said corporation; provided, nevertheless, that the number of members shall never be greater than thirty.

SECTION 2. The said corporation shall have full power and authority to determine at what times and places their meetings shall be holden, and the manner of notifying the Trustees to convene at such meetings, and also, from time to time to elect a President of said College, and such professors, tutors, instructors, and other officers of the said College, as they shall judge most for the interest thereof, and to determine the duties, salaries, emoluments, responsibilities, and tenures of their several offices. And the said corporation are further empowered to purchase or erect, and keep in repair, such houses and other buildings as they shall judge necessary for the said College; and also to make and ordain, as occasion may require, reasonable rules, orders, and by-laws, not repugnant to the Constitution and Laws of this Commonwealth, with reasonable penalties for the good government of the said College, and for the regulation of their own body, and also to determine and regulate the course of instruction in said College, and to confer such degrees as are usually conferred by colleges in New England; provided, nevertheless, that no corporate business shall be transacted at any meeting unless one third, at least, of the Trustees are present.

SECTION 3. The said corporation may have a common seal, which they may alter or renew at their pleasure, and all deeds sealed with the seal of said corporation, and signed by their order, shall, when made in their corporate name, be considered in law as the deeds of said corporation; and said corporation may sue and be sued in all actions, real, personal, or mixed; and may prosecute the same to final judgment and execution by the name of the Trustees of Tufts College; and said corporation shall be capable of taking and holding in fee simple, or any less estate, by gift, grant, bequest, devise, or otherwise, any lands, tenements, or other estate, real or personal; provided, that the clear annual income of the same shall not exceed two hundred thousand dollars.

SECTION 4. The clear rents and profits of all the estate, real and personal, of which the said corporation shall be seized and possessed, shall be appropriated to the endowment of said College in such manner as shall most effectually promote virtue and piety and learning in such of the languages, and of the liberal and useful arts and sciences, as shall be recommended from time to time by the said corporation, they conforming to the will of any donor or donors in the application of any estate which may be given, devised, or bequeathed, for any particular object connected with the College.

SECTION 5. No instructor in said College shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges, honors, or degrees of said College, on account of the religious opinions he may entertain.

SECTION 6. The Legislature of this Commonwealth may grant any further powers to, or alter, limit, annul, or restrain, any of the powers vested by this act in the said corporation, as shall be found necessary to promote the best interests of the said College, and more especially may appoint and establish overseers or visitors of the said College, with all necessary powers for the better aid, preservation, and government thereof.

SECTION 7. The granting of this Charter shall never be considered as any pledge on the part of the Government that pecuniary aid shall hereafter be granted to the College.

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FREDERIC W. HAMILTON, A. M., Pawtucket, R. I.
*Lecturer on Christian Economics.*

## OTHER OFFICERS.

HELEN L. MELLEN, 126 Packard Avenue.
*Librarian.*

CHARLES J. SNOW, A.B., Talbot Avenue.
*Assistant Librarian.*

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JOHN P. MARSHALL, A.M., 48 Professors Row.
*Director of the Museum.*

FRANK W. DURKEE, A.M., West Hall, 5.
*Director of the Gymnasium.*

WILLIAM R. WOODBURY, A. B., M. D., 164 Newbury St., Boston.
*Medical Director of the Gymnasium.*

CHARLES R. GRAY, Medford.
*Superintendent of Buildings.*

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### Proctors.

| | |
|---|---|
| FRANK E. SANBORN, | West Hall, West. |
| FRANK W. DURKEE, | West Hall, East. |
| FREDERICK C. KENYON, | Dean Hall. |
| FRED D. LAMBERT, | East Hall. |

# Faculty of the College of Letters.

ELMER H. CAPEN, D. D., PRESIDENT.
*Professor of Moral Philosophy and Political Economy.*

JOHN P. MARSHALL, A. M., DEAN.
*Pearson Professor of Geology and Mineralogy.*

JEROME SCHNEIDER, PH. D.
*Professor of the Greek Language and Literature.*

HEMAN A. DEARBORN, A. M.
*Professor of the Latin Language and Literature.*

WILLIAM R. SHIPMAN, D. D.
*Professor of Rhetoric, Logic, and Metaphysics.*

BENJAMIN G. BROWN, A. M.
*Walker Professor of Mathematics.*

CHARLES D. BRAY, C. E., A. M.
*Professor of Civil and Mechanical Engineering.*

CHARLES E. FAY, A. M.
*Wade Professor of Modern Languages.*

AMOS E. DOLBEAR, M. E., PH. D.
*Professor of Physics and Astronomy.*

WILLIAM L. HOOPER, A. M.
*Professor of Electrical Engineering.*

DAVID L. MAULSBY, A. M., SECRETARY.
*Professor of English Literature and Oratory.*

J. STERLING KINGSLEY, S. D.
*Professor of Biology.*

FRANK P. GRAVES, A. M., PH. D.
*Professor of Classical Philology.*

GARDNER C. ANTHONY, A. M.
*Professor of Technical Drawing.*

ARTHUR MICHAEL, PH. D.
*Professor of Chemistry.*

FRANK W. DURKEE, A. M.
*Instructor in Chemistry and Physical Training.*

FRANK E. SANBORN, S. B.
*Instructor in Mechanical Engineering.*

EDWIN A. START, A. M.
*Instructor in History.*

LEO R. LEWIS, A. M.
*Instructor in French.*

FRANK T. DANIELS, A. M. B.
*Instructor in Civil Engineering.*

HORATIO W. MYRICK, A. M. B.
*Walker Special Instructor and Instructor in Electrical Engineering.*

THOMAS WHITTEMORE, A. B.
*Instructor in English.*

JOHN E. BUCHER, A. C., PH. D.
*Instructor in Organic Chemistry.*

THOMAS H. CLARK, S. B., PH. D.
*Instructor in Quantitative Analysis.*

## STANDING COMMITTEES OF THE FACULTY.

PROMOTIONS: Professor Shipman, *Chairman;* Professors Hooper, Brown, Fay, and Mr. Durkee.

SCHOLARSHIPS AND AIDS: President Capen, *Chairman;* Professors Shipman and Dearborn.

PROGRAM: Mr. Start, *Chairman;* Professors Hooper, Dearborn, Brown, and Mr. Lewis.

CATALOGUE: Mr. Start, *Chairman;* Professors Hooper and Maulsby.

RELIGIOUS SERVICES: President Capen, *Chairman;* Professors Shipman, Bray, Maulsby, and Mr. Sanborn.

MEMBERS ON THE PART OF THE FACULTY OF THE ADVISORY COMMITTEE ON ATHLETICS: Professor Knight (from the Divinity School), *Chairman;* Mr. Durkee and Mr. Start.

GLEE CLUB: Mr. Lewis, *Chairman;* Professor Graves, and Professor Knight (from the Divinity School).

FRESHMAN PLANS OF STUDY: Professor Dearborn, *Chairman;* Professors Shipman, Brown, Graves, and Mr. Lewis.

DEPARTMENT OF ENGINEERING: Professor Brown, *Chairman;* President Capen, Professors Hooper and Bray, and Mr. Durkee.

BOOKS AND SUPPLIES: Mr. Lewis, *Chairman;* Messrs. Start and Durkee.

## TUFTS COLLEGE STUDIES.

### Board of Editors.

THE PRESIDENT, *Ex-Officio.*

Professor Graves.
Professor Knight.
Professor Dolbear.
Professor Kingsley.

# Undergraduates.*

## COURSES IN LIBERAL ARTS.

### Senior Class.

| | | |
|---|---|---|
| Averell, Eugene | *Lynn* | Dean Hall, 1. |
| Barney, Charles Neal | *Lynn* | West Hall, 22. |
| Chessmore, Frank Harding | *Jonesville, Vt.* | West Hall, 12. |
| Clark, Charles Dow | *St. Albans, Vt.* | West Hall, 7. |
| Clarke, Edward Perkins | *Mystic, Conn.* | Mid. Hall, 11. |
| Craig, Edward Channing | *Franklin* | West Hall, 24. |
| Dunham, William Roger | *Barre, Vt.* | West Hall, 12. |
| Eaton, Clarence Livingstone, | *Worcester* | West Hall, 2. |
| Fobes, Harold Bartlett | *Portland, Me.* | West Hall, 6. |
| Folsom, Harry Charles | *Oakland, Me.* | West Hall, 6. |
| Frank, Henry Pennell | *Portland, Me.* | *Θ Δ Χ* House. |
| Ireland, George Preston | *Springfield* | East Hall, 16. |
| Lynde, Frank Martin | *Williamstown, Vt.* | West Hall, 19. |
| Ricketts, Charles Lucius | *Monson* | West Hall, 22. |
| Saunders, Joseph Henry | *Everett* | *Δ Υ* House. |
| Sheldon, James Fitts | *Haverhill* | Dean Hall, 6. |
| Smith, Robert Baxter | *No. Tunbridge, Vt.* | *Δ Υ* House. |
| Whitehorne, William Risby, | *W. Somerville* | 14 Elmwood. |
| Winslow, Guy Monroe | *W. Somerville* | Mid. Hall, 11. |

| | | |
|---|---|---|
| Larrabee, Frank Philip | *Portland, Me.* | West Hall, 1. |

### Junior Class.

| | | |
|---|---|---|
| Bailey, Mabel Prescott | *Methuen.* | 114 Professors Row. |
| Barnard, Percival Gates | *Lowell* | West Hall, 29. |
| Belcher, Walter Hermon | *W. Medford* | East Hall, 16. |
| Cheever, Ralph Holbrook | *Portsmouth, N. H.* | Mid. Hall, 10. |
| Congdon, Joseph | *Clarendon, Vt.* | *Δ Υ* House. |
| Corridan, Eugene Francis | *Weymouth* | Dean Hall, 13. |

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* The right-hand column contains the college residence of every student having such residence, the neighboring cities of Somerville and Medford being thus included. The middle column records the home address.

| | | |
|---|---|---|
| Dillon, David Francis | *Palmer* | Dean Hall, 13. |
| Fickett, Edward Wyman | *Spencer* | *Δ Υ* House. |
| Goddard, Mary Frances | *W. Somerville* | 46 Newbury St. |
| Hall, Clifford Foster | *Nashua, N. H.* | West Hall, 16½. |
| Hayes, Ethel Munroe | *Somerville* | 252 Medford St. |
| Hill, Blanche Harwood | *Medford* | Main St. |
| Holbrook, Henry William | *Palmer* | West Hall, 24. |
| Johnson, Sidney Breed | *Lynn* | East Hall, 24. |
| Jordan, Charles Gilbert | *E. Braintree* | West Hall, 28. |
| Lewis, Orlando Faukland | *Tufts College* | 20 Professors Row. |
| Lowell, Charles Sumner | *Rockland* | *Δ Υ* House. |
| Maguire, George Francis | *Rockland* | East Hall, 19. |
| Marvin, Reignold Kent | *Roxbury* | West Hall, 25. |
| Meacom, Gertrude Holbrooke, | 278 *Chestnut St., Chelsea.* | |
| O'Neil, William Roe | *Attleboro* | East Hall, 18. |
| Polk, Cora Alma | *Towanda, Pa.* | 2 Emory St., Medford. |
| Sampson, Edwin Russell | *N. Weymouth* | West Hall, 2. |
| Small, William Morton | *Baldwinville* | *Δ Υ* House. |
| Smith, Orren Henry | *Williamstown, Vt.* | West Hall, 12. |
| Stevens, Edwin Bicknell | *Auburn, Me.* | Mr. Start's. |
| Stover, Josiah Albert | *Kittery, Me.* | *Δ Τ Δ* House. |
| Tifft, Marie Louise | *Somerville* | 7 Lee St. |
| Whitaker, Henry Charles | *Richmond, Vt.* | *Θ Δ Χ* House. |

## Sophomore Class.

| | | |
|---|---|---|
| Blanchard, Lem Gale | *So. Barre, Vt.* | West Hall, 15. |
| Brown, Helen Elizabeth | *Waltham* | Metcalf Hall. |
| Burleigh, Winthrop Ridgely, | *Deering, Me.* | East Hall, 20. |
| Butterfield, John McArthur, | *Revere* | East Hall, 4. |
| Cross, Florence Ledyard | *Rochester, N. Y.* | Metcalf Hall. |
| Day, John Boynton Wilson | *Charlestown* | West Hall, 3. |
| Dyer, Florence Gertrude | *Medford* | 9 Everett St. |
| Fickett, Mary Grace | *Spencer* | Metcalf Hall. |
| Gale, Frank Randall | *Barre, Vt.* | West Hall, 16. |
| Gardner, Lucie Marion | 4 *Lynde St., Salem.* | |
| Hewitt, Ernest John | *So. Royalton, Vt.,* | West Hall, 15. |
| Hodgdon, Georgia Louise | *Waltham* | Metcalf Hall. |
| Hodge, Edith Louise | *Franklin* | Metcalf Hall. |
| Hodgman, Arthur Ames | *E. Somerville* | East Hall, 4. |
| Knowlton, John Wellington, | *New Bedford* | West Hall, 20. |
| McDonough, Margaret | 51 *Winn St., Woburn.* | |
| Parks, Warren Stone | *Hudson* | *Δ Τ Δ* House. |
| Perry, Carlton Albert | *Fort Plain, N. Y.,* | West Hall, 23. |

| | | |
|---|---|---|
| Russell, Winnie Warren | 85 *Montvale Ave.*, *Woburn.* | |
| Sanford, Rollin Brewster | *Albany, N. Y.* | West Hall, 23. |
| Shipman, Albert Eaton | *Tufts College* | West Hall, 21. |
| Start, Alaric Bertrand | *Tufts College* | Mr. Start's. |
| Sturtevant, Olive Kilburn | 33 *Gould St.*, *Stoneham.* | |
| Wheeler, Alfred Winslow | *Oakland, Me.* | East Hall, 21. |
| White, Winthrop Warner | *Medford* | East Hall, 12. |
| Williams, Franklin Bates | *Roxbury* | Dean Hall, 7. |

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| | | |
|---|---|---|
| Davis, Horace Amos | *Dorchester* | Dean Hall, 7. |

## Freshman Class.

| | | |
|---|---|---|
| Anderson, Malcolm Campbell | *W. Somerville* | 18 Farragut Ave. |
| Arnold, John Emerson | *Braintree* | East Hall, 2. |
| Avery, Elwood | *Everett* | Mid. Hall, 5. |
| Bancroft, Irving Reed | *Woburn* | Mid. Hall, 7. |
| Bartlett, Ethel Townsend | *Somerville* | 113 Highland Ave. |
| Boomer, Perley Eugene | *Medford* | Mid. Hall, 5. |
| Boutelle, Alice Cleoria Alexandria | *White River Jct., Vt.* | 90 Curtis St., Som'l. |
| Buck, Lula Adine Howe | *Gorham, N. H.* | 2 Emory St., Med'd. |
| Capen, Samuel Paul | *Tufts College* | 8 Professors Row. |
| Cousens, John Albert | *Brookline* | Dean Hall, 2. |
| Danforth, Rhoda Elizabeth | *E. Norton* | 12 Mt. Pleasant Ave., Somerville. |
| Daniels, George Emory | *Franklin* | East Hall, 23. |
| Donaldson, James Frank | *Salem* | West Hall, 19. |
| Endicott, Annie | 17 *Lafayette Ave.*, *Chelsea.* | |
| Evans, Mary Eliza | 16 *Wright St.*, *Stoneham.* | |
| Flint, Marion Lenore | *Spring St.*, *Bedford.* | |
| Gifford, Fannie Crocker | *Provincetown* | Metcalf Hall. |
| Grant, Beatrice Alexandra | 29 *Pleasant St.*, *Woburn.* | |
| Howard, Guy Charles | *Farmington, Me.* | East Hall, 25. |
| Johnson, Edward Dunbar | *Methuen.* | |
| Jones, Willie Parker | *Stoneham* | East Hall, 3. |
| May, Benjamin Dexter | *Hudson* | Dean Hall, 14. |
| Merrill, Harriette Johnson | *E. Eddington, Me.* | Metcalf Hall. |
| Mitchell, Josephine Laura | *Somerville* | 24 Thorpe Place. |
| Moore, Willis Albert | *Melrose* | East Hall, 29. |
| Olds, Laura Susan | *Barre, Vt.* | 107 Highland Ave., Somerville. |
| Peirce, Frank Lincoln | *Brimfield* | West Hall, 29. |
| Ransom, Clara | *Tufts College* | 80 Professors Row. |

| | | |
|---|---|---|
| Ransom, William Richard | *Tufts College* | 80 Professors Row. |
| Root, Martha Lane | *East Douglass* | Metcalf Hall. |
| Russell, James Porter | *Farmington, Me.* | East Hall, 25. |
| Small, Sylvanus Griswold | *Baldwinville* | 117 Winthrop St., Medford. |
| Smith, Simeon Conant | *Salem* | West Hall, 16. |
| Smith, Arthur Garfield | *N. Tunbridge, Vt.* | West Hall, 3. |
| Stebbins, Katherine Louise | *W. Somerville* | 30 Day Street. |
| Sweet, Harold Edward | *Attleboro* | *Δ Υ* House. |
| Tousey, Coleman | *Tufts College* | 106 Professors Row. |
| Turner, Harriette Alice | *W. Somerville* | 12 Mt. Pleasant Ave. |
| Welch, Walter Frederick | *Stoneham* | East Hall, 3. |
| Whitman, Walter George | *Norway, Me.* | East Hall, 5. |

| | | |
|---|---|---|
| Hammond, Roland, Jr. | *Brockton* | East Hall, 5. |

## ENGINEERING COURSES.

### Senior Class.

| | | |
|---|---|---|
| George, Arthur Lincoln | *Lebanon, N. H.* | Dean Hall, 5. |
| Page, Charles Harrison | *Lowell* | East Hall, 19. |

### Junior Class.

| | | |
|---|---|---|
| Bolles, Robert Henry* | *Marion* | East Hall, 31. |
| Brothers, George Arthur | *Lowell* | West Hall, 26. |
| Hicks, Frank Files | *W. Somerville* | East Hall, 34. |
| Ives, John Nash | *Roxbury* | *Δ Τ Δ* House. |
| Ohata, Konosuke | *Ibaraki-ken, Japan,* | East Hall, 27. |
| Perry, Leslie Lawrence | *Rutland, Vt.* | *Δ Υ* House. |
| Pierce, Guy Clifford | *Lowell* | West Hall, 25. |
| Sabine, Edward Dana | *Malden* | West Hall, 31. |
| Smith, Warner Daniel | *Marshfield, Vt.* | Mid. Hall, 12. |
| Symonds, Herbert Washburn, | *Hancock, N. H.* | East Hall, 14. |
| Thurston, Arthur | *Haverhill* | West Hall, 26. |
| Whiton, Charles Edward | *Greenwood* | East Hall, 32. |

### Sophomore Class.

| | | |
|---|---|---|
| Barden, Henrie Clark | *No. Attleboro* | West Hall, 27. |
| Browning, Charles Augustus, | *Somerville* | East Hall, 22. |
| Clark, Charles Brooks | *Medford* | East Hall, 17. |
| Crowley, Daniel Francis | *Medford* | 10 West St. |

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* Deceased (November 8, 1894.)

| | | |
|---|---|---|
| Edmands, John Stetson | *Somerville* | 86 Avon St. |
| Eldridge, Harold Norton | *Dexter, Me.* | West Hall, 9. |
| Fenton, Robert Hall | *Willimantic, Conn.,* | East Hall, 33. |
| Garcelon, Herbert Irving | *W. Somerville* | East Hall, 22. |
| Graves, Wallace Humphrey, | *Bangor, Me.* | East Hall, 11. |
| Green, Charles Boden | *Lynn* | *Δ Τ Δ* House. |
| Hall, Walter Davis | *Medford* | East Hall, 12. |
| Hammond, Charles Lincoln | *Atlantic* | East Hall, 13. |
| Healey, Rolla Edwin | *Claremont, N. H.,* | *Δ Τ Δ* House. |
| Hill, George William | *Stoneham* | *Δ Τ Δ* House. |
| Howe, Wilson Tyler | *E. Brookfield* | West Hall, 32. |
| Huston, Milton | *W. Falmouth, Me.,* | East Hall, 9. |
| Lane, Harry Alfred | *Foxboro* | Dean Hall, 10. |
| Merrill, Meldon Humphrey | *Yarmouth, Me.* | East Hall, 14. |
| Mitchell, Stephen Clarence | *Hull* | Dean Hall, 10. |
| Montgomery, Charles Eland, | *Lowell* | West Hall, 17. |
| Nash, Henry Ray | *Bradford* | East Hall, 28. |
| Parker, Harry Orville | *Atlantic* | East Hall, 13. |
| Plorme, Max Alaric | *Rocky Hill, Conn.,* | West Hall, 9. |
| Randlett, Fred Morse | *Lawrence* | East Hall, 15. |
| Richardson, George Edward, | *Lowell* | West Hall, 17. |
| Robinson, Albert DeMerritt, | *Windham, Me.* | Dean Hall, 9. |
| Russell, Howard Irving | *W. Somerville* | East Hall, 22. |
| Ryder, Delano Richmond | *Marion* | East Hall, 28. |
| Taylor, William Gavin | *Medford* | East Hall, 34. |
| Thayer, Arthur Ellis | *W. Somerville* | East Hall, 22. |
| Walker, Charles Perley | *Lawrence* | Dean Hall, 10. |
| Weeks, Stephen Merrill | *Orford, N. H.* | East Hall, 33. |
| Wheeler, Walter Stedman | *Hudson* | Dean Hall, 14. |
| Wyman, Walter Scott | *Oakland, Me.* | East Hall, 21. |

## Freshman Class.

| | | |
|---|---|---|
| Abbott, Cushman | *Dover, N. H.* | Dean Hall, 2. |
| Ahearn, George Edward | *Arlington* | Mid. Hall, 5. |
| Allen, Theodore Brooks | *E. Braintree* | East Hall, 2. |
| Andrews, Herbert Woodbury | *Lynn* | East Hall, 11. |
| Barker, Fred Percy | *Waltham* | West Hall, 11. |
| Bates, Henrie Evans | *Marion* | East Hall, 31. |
| Brown, Thomas Dalton | 30 *N. Russell St., Boston.* | |
| Byam, Frank Albert | *Waltham* | West Hall, 9. |
| Chapin, Harry Taylor | *Monson* | West Hall, 31. |
| Chase, Josiah Brown, Jr. | *W. Newton* | West Hall, 8. |
| Christian, Leroy Bernard | *Auburn, Me.* | Mid. Hall, 9. |
| Chubb, Thomas Briggs | *Allston* | Mid. Hall, 7. |

| | | |
|---|---|---|
| Clark, Warren Stewart | *St. Albans, Vt.* | West Hall, 7. |
| Clark, Irving Stockton | *Boston* | Mid. Hall, 9. |
| Cole, John Appleton | *Gloucester* | East Hall, 10. |
| Cummings, Morton Everett | *Medford* | East Hall, 16. |
| French, Edmund Merritt | *W. Hingham* | East Hall, 26. |
| Gilman, John Dexter | *Boston* | West Hall, 4. |
| Goodwin, Fred Marion | *Houghton St., Dorchester.* | |
| Harwood, George Alec | *Boston* | Mid. Hall, 10. |
| Jacobs, Benjamin Foster, Jr. | *Medford* | West Hall, 27. |
| Jones, Guy Edward | *Marlow, N. H.* | East Hall, 30. |
| Lewis, Emory Sabine | *Meriden, Conn.* | East Hall, 6. |
| Littleton, James Norman | *Hingham Centre* | East Hall, 26. |
| Maddocks, John Arthur | *Boothbay Harbor, Me.*, | West Hall, 21. |
| Morgan, Albion Bateman | *Falmouth, Me.* | East Hall, 9. |
| Olmstead, Elmer Sheridan | *Somerville* | 15 Sewall St. |
| Parker, Richard Bentley | *Medford* | West Hall, 27. |
| Parker, Charles William | *Reading* | West Hall, 1. |
| Patterson, Walter Arthur | *Waltham* | West Hall, 11. |
| Perkins, Llewellyn Rood | *So. Woodstock, Vt.*, | 80 Professors Row. |
| Preble, Ernest Orello | *Webster* | West Hall, 4. |
| Ray, Frederick Nash | *Bradford* | East Hall, 15. |
| Richardson, Ernest Stanley, | *Danvers* | West Hall, 13. |
| Robinson, George Nelson | *Winchester* | East Hall, 6. |
| Savage, James Arthur | *W. Somerville* | 25 Fairmount Ave. |
| Schoolfield, Frank Robert | *Baltimore, Md.* | East Hall, 1. |
| Shaw, Edwin Adams | *W. Somerville* | 18 Bellingham St. |
| Simpson, John Fred | *S. Newmarket, N.H.*, | *Δ Υ* House. |
| Smith, Kilby Page | *Waltham* | West Hall, 8. |
| Titus, Anson Merrill | *W. Somerville* | 19 Conwell Ave. |
| Town, Frederick Edward | *Washington, D. C.* | East Hall, 1. |
| Wells, Roy Titus | *Foxboro* | East Hall, 30. |

## Special Students.

| | | |
|---|---|---|
| Allen, Nahum Windsor | 514 *Main St., Malden.* | |
| Atwood, Louise Russell | *Medford* | 4 Garden St. |
| Bailey, Dora Albonetta | *Somerville* | Highland Ave. cor. Central St. |
| Bailey, Arthur Low | *Methuen* | 90 Curtis St. |
| Burbank, Ralph Lyman | *Medford* | East Hall, 32. |
| Chick, Walter Everett | *Medford* | East Hall, 34. |
| Clement, Sumner | *Newton Centre* | *Δ Υ* House. |
| Conway, Arthur Franklin | *Tewksbury* | Mid. Hall, 5. |
| Cummings, Maidelle Leslie, | *W. Somerville* | Metcalf Hall. |
| Dolbear, Katy Ella | *Tufts College* | 134 Professors Row. |

| | | |
|---|---|---|
| Graves, Charles Brown | *Marblehead* | West Hall, 13. |
| Hayward, Daniel Baxter | *E. Braintree* | West Hall, 28. |
| Hornbrooke, Dudley | *Newton* | Dean Hall, 12. |
| Mackie, Wendell | *Boston* | Dean Hall, 3. |
| Moakler, Olive Frances | 76 *Adams St., Medford.* | |
| Noyes, Charles Ellsworth | *Lisbon, N. H.* | *Δ Υ* House. |
| Parke, Robert Hayward | *Monson* | East Hall, 6. |
| Pearson, George Frederick | *Halifax, N. S.* | Dean Hall, 11. |
| Pindar, Ralph Waldo | *Lowell* | *Θ Δ Χ* House. |
| Potter, William Edward | *Lowell* | West Hall, 32. |
| Putnam, Frank Wendell | *Charlestown* | *Δ Υ* House. |
| Rowbotham, George Walter, | *Boston* | East Hall, 22. |
| Ruggles, Louise Kingsley | 24 *Charles St., Wakefield.* | |
| Sibley, Carrie Hunter | *Spencer* | Metcalf Hall. |
| Walker, John Meredith | *Waltham* | West Hall, 11. |
| Wilson, May | *Somerville* | 40 Vinal St. |
| Winch, Sadie Chapman | *Lawrence* | Metcalf Hall. |

## SUMMARY.

| | | |
|---|---|---|
| GRADUATES | 6 | |
| COURSES IN LIBERAL ARTS: | | |
| Seniors | 20 | |
| Juniors | 29 | |
| Sophomores | 27 | |
| Freshmen | 41 | |
| | — | 117 |
| ENGINEERING COURSES: | | |
| Seniors | 2 | |
| Juniors | 12 | |
| Sophomores | 34 | |
| Freshmen | 43 | |
| | — | 91 |
| SPECIAL STUDENTS | 26 | |
| | — | 26 |
| TOTAL IN COLLEGE OF LETTERS | | 234 |
| TOTAL IN DIVINITY SCHOOL | | 43 |
| TOTAL IN MEDICAL SCHOOL | | 94 |

# Requirements for Admission.

## SUBJECTS OF EXAMINATION.

The subjects in which candidates for admission to the Freshman Class may be examined are given below. The requirements for candidates for the several courses will be found in the schedule of examination groups on pages 33 and 34.

**Latin.**

**1.** LATIN GRAMMAR. — Allen and Greenough's or Harkness's Grammar, including Prosody.

**2.** CÆSAR. — Gallic War, Books I.–IV.

**3.** CICERO. — Orations against Catiline, for Archias, Marcellus, and the Manilian Law.

**4.** VIRGIL. — Æneid, Books I.–VI.

**5.** OVID. — Metamorphoses, 2,500 lines.

**6.** LATIN COMPOSITION. — Collar's Latin Composition, and translation into Latin of a connected passage of English prose, not taken from the text-book, but involving only familiar words and idioms.

ALTERNATIVES. — While the foregoing requirements are preferred, equivalents will be accepted; also in place of the last two orations of Cicero and requirement 5, an examination may be taken, if desired, on average passages from the above-named works, not included in the portions prescribed.

**Greek.**

**7.** GREEK GRAMMAR. — Hadley-Allen's or Goodwin's Greek Grammar, including Prosody.

**8.** XENOPHON. — Anabasis, four books.

**9.** HOMER. — Iliad, three books.

**10.** GREEK COMPOSITION. — The translation into Greek of a connected passage of English prose. Woodruff's Greek Composition is recommended as a drill-book.

ALTERNATIVES. — In place of requirements 8 and 9, translation at sight of easy passages of the Anabasis and average passages from the Iliad (with a vocabulary of the less-used words).

**11.** ELEMENTARY GERMAN.

**German.**

(*a*) Proficiency in elementary grammar, implying especially familiarity with the following topics: declension of such nouns as are readily classified, of adjectives, and pronouns; conjugation of weak and of the more usual strong verbs; the more common prepositions;

German. the simpler uses of the modal auxiliaries; the simpler rules of syntax and of word order.

[This specification of topics is not proposed as restrictive, but rather to emphasize the importance of a thorough grounding of the pupil in those elements on which later good work is necessarily founded. Proficiency in grammar may be tested both by direct questioning and through translation of simple English into German.]

(*b*) Ability to translate a passage of simple prose at sight, a vocabulary of the less-used words being furnished.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from one hundred and fifty to two hundred duodecimo pages of easy German, chiefly narrative prose with a few lyric poems.]

(*c*) Ability to pronounce German, and to recognize German words and simple phrases when uttered.

[It is recommended that careful attention be given from the beginning to the fluent and intelligent reading aloud of the German works used in the class-room.]

### 12. INTERMEDIATE GERMAN.

(*a*) The candidate must give evidence of a thorough knowledge of the elementary grammar (see above, 11*a*), and of the use of modes and tenses.

(*b*) He must have translated the equivalent of four hundred pages of German, including Wilhelm Tell (Schiller), and twenty pages of lyrics or ballads.

(*c*) He must be able to pronounce German, and to render simple English sentences into that language.

### 13. ADVANCED GERMAN.

(*a*) Proficiency in more advanced grammar. In addition to a thorough knowledge of accidence (including the elements of word-formation) and of the principal values of prepositions and conjunctions, the candidate must be familiar with the essentials of German syntax, particularly that of the modal auxiliaries and the subjunctive and infinitive modes.

(*b*) Ability to translate ordinary German, to be acquired by the reading, in addition to the elementary requirement, of the following works: Der Fluch der Schönheit (Riehl); Aus dem Staat Friedrichs des Grossen (Freytag); Die Harzreise (Heine); the first three books of Dichtung und Wahrheit (Goethe); Minna von Barnhelm (Lessing); Wilhelm Tell and Das Lied von der Glocke (Schiller); and thirty pages of lyrics or ballads.

(*c*) Ability to write in German a paragraph upon an assigned subject chosen from the work specified in the preceding section.

[While, at the examination, matters of very subordinate interest or of minor detail will not be set as subjects for composition, it is hoped that teachers may be led by this requirement to stimulate from the beginning the pupil's interest in the subject-matter of the works read in preparation.]

**French.**

**14.** ELEMENTARY FRENCH.

(*a*) Proficiency in elementary grammar, implying especially familiarity with the following topics: inflection of nouns and adjectives for gender and number, excepting unusual cases; the "pronominal adjectives"; the use of pronouns, especially the forms and positions of personal pronouns; the partitive constructions; the inflection of the regular and the more usual irregular verbs, — such as *dire*, *faire*, and the classes represented by *ouvrir*, *sentir*, *venir*, *paraître*, *conduire*, and *craindre*.

[See note under Elementary German (*a*).]

(*b*) Ability to translate simple prose at sight.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from two hundred to four hundred duodecimo pages from at least three dissimilar works.]

(*c*) Ability to pronounce French, and to recognize French words and simple phrases when uttered.

[See note under Elementary German (*c*).]

**15.** INTERMEDIATE FRENCH.

(*a*) and (*c*) as above.

(*b*) He must have translated the equivalent of five hundred pages of French, including the plays Mademoiselle de la Seiglière (Sandeau) and Athalie (Racine).

**16.** ADVANCED FRENCH.

(*a*) Proficiency in more advanced grammar. In addition to a knowledge of the accidence and of the values of prepositions and conjunctions, the candidate must be familiar with the essentials of French syntax, especially the use of modes and tenses, and with the more frequently recurring idiomatic phrases.

(*b*) Ability to translate standard French, to be acquired by reading, in addition to the elementary requirement, not less than one thousand duodecimo pages, including Le Siège de Berlin and La dernière Classe (Daudet); Colomba (Mérimée); Mademoiselle de la Seiglière, the play (Sandeau); Jeanne Darc (Henri Martin); and one play each of Corneille, Racine, and Molière.

(*c*) Ability to write in French a paragraph upon an assigned subject chosen from the works specified in the preceding section.

[See note under Advanced German (*c*).]

**Mathematics.**

**17.** ARITHMETIC, including the Metric System.

**18.** ALGEBRA, through quadratic equations, including radical quantities, together with proportion, arithmetical and geometrical progression, and the binomial theorem for positive integral exponents.

**Mathematics.** 19. PLANE GEOMETRY.

20. SOLID GEOMETRY.

**History.** 21. ANCIENT HISTORY (Greece and Rome), with either

(*a*) MEDIÆVAL AND MODERN EUROPEAN HISTORY, or

(*b*) THE HISTORY OF ENGLAND AND THE UNITED STATES.

The amount of preparation required is indicated by the following list of works: For Ancient History, Oman's or Smith's (smaller) Greece, Allen's Roman People; for Mediæval and Modern Europe, Myers's General History; for the History of England and the United States, Montgomery's Leading Facts in English History, Fiske's History of the United States for Schools.

**English.** 22. ENGLISH.

*Note.* — No candidate will be accepted in English whose work is notably defective in point of spelling, punctuation, syntax, idiom, or division into paragraphs.

1. *Reading and Practice.* — A certain number of books will be set for reading. The candidate will be required to present evidence of a general knowledge of the subject-matter, and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics, to be chosen by the candidate from a considerable number — perhaps ten or fifteen — set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may be allowed to present an exercise book, properly certified by his instructor, containing compositions or other written work done in connection with the reading of the books.

The books set for this part of the examination will be: —

1895. — Shakespeare's Twelfth Night; The Sir Roger de Coverley Papers in *The Spectator;* Irving's Sketch Book; Scott's Abbot; Webster's First Bunker Hill Oration; Macaulay's Essay on Milton; Longfellow's Evangeline.

1896. — Shakespeare's A Midsummer Night's Dream; Defoe's History of the Plague in London; Irving's Tales of a Traveller; Scott's Woodstock; Macaulay's Essay on Milton; Longfellow's Evangeline; George Eliot's Silas Marner.

1897. — Shakespeare's As You Like It; Defoe's History of the Plague in London; Irving's Tales of a Traveller; Hawthorne's Twice Told Tales; Longfellow's Evangeline; George Eliot's Silas Marner.

1898. — Milton's Paradise Lost, Books I. and II.; Pope's Iliad, Books I. and XXII.; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables.

English.

2. *Study and Practice.* — This part of the examination presupposes the more careful study of each of the works named below. The examination will be upon subject-matter, form, and structure; and will also test the candidate's ability to express his knowledge with clearness and accuracy. The books set for this part of the examination will be: —

1895. — Shakespeare's The Merchant of Venice; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Macaulay's Essay on Addison.

1896. — Shakespeare's The Merchant of Venice; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Webster's First Bunker Hill Oration.

1897. — Shakespeare's The Merchant of Venice; Burke's Speech on Conciliation with America; Scott's Marmion; Macaulay's Life of Samuel Johnson.

1898. — Shakespeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Tennyson's The Princess.

Sciences.

**23.** PHYSICS. — The requirement in Physics is an acquaintance with the subject as treated in Avery's or Gage's work, or any other of similar grade, with special attention to Mechanics and ability to work out numerically problems in that department.

**24.** CHEMISTRY. — Remsen's Briefer Course or its equivalent.

**25.** NATURAL HISTORY. — Any two of the four subjects: Botany, Zoölogy, Physiology, or Geology. The amount required in each is essentially covered by any good text-book for secondary schools. In Botany and Zoölogy, laboratory work is of more importance than the study of the text-book. As illustrating the character of preparation required, the following books may be mentioned: In Botany, Bessey's Briefer Course, Campbell's Structural and Systematic Botany, or Spaulding's Introduction to Botany; in Zoölogy, Colton's Practical Zoölogy; in Physiology, Huxley's Elementary Physiology, Jenkins's Advanced Lessons in Human Physiology, or Martin's Human Body, briefer course; in Geology, Dana's Geological Story Briefly Told, or Leconte's Elements of Geology.

## EXAMINATION GROUPS.

For courses leading to degree of A. B.

Candidates for courses leading to the degree of Bachelor of Arts must take their examination in the subjects comprised in one of the two following groups: —

### Group I.

LATIN, 1, 2, 3, 4, 5, and 6.
GREEK, 7, 8, 9, and 10.
GERMAN, 11, or FRENCH, 14.
MATHEMATICS, 17, 18, and 19.
HISTORY, 21.
ENGLISH, 22.

For courses leading to degree of A. B.

### Group II.

Latin, Mathematics, History, and English, as in I.

German, 11 and 13.
French, 14.
or
French, 14 and 16.
German, 11.

This group differs from Group I in the substitution for Greek of advanced work in Modern Languages.

For courses leading to degree of Ph. B.

Candidates for courses leading to the degree of Bachelor of Philosophy must take their examination in the subjects comprised in one of the two following groups: —

### Group III.

Latin, Mathematics, History, and English, as in I.

German, 11 and 12.
French, 14.
or
French, 14 and 15.
German, 11.

### Group IV.

Mathematics, History, and English, as in I.

German, 11 and 13.
French, 14.
or
French, 14 and 16.
German, 11.
or
German, 11 and 12.
French, 14 and 15.

Physics, 23.
Chemistry, 24.
Natural History, 25.

[Latin, 1, 2, 3, and a part of 4, or their equivalent, will be accepted in place of one intermediate Modern Language, that is, German, 11 and 12, or French, 14 and 15.]

Groups III and IV are offered to meet the needs of graduates of the English courses, so called, in the best high schools, who may desire to enter upon college study looking toward a degree. It will be seen, by reference to the appropriate numbers in the preceding subject list, that Group III accepts a smaller amount of preparation in the modern languages than that required for entrance through Group II to courses leading to the degree of Bachelor of Arts. Group IV allows the substitution for Latin of an increase over the requirement of Group III in modern languages, and of elementary work in three scientific subjects.

**For Candidates for Engineering Courses.**

Candidates for the courses leading to the degrees of Bachelor of Electrical or Civil Engineering will be required to take the subjects comprised in

### Group V.

MATHEMATICS, 17, 18, 19, and 20.
GERMAN, 11, or FRENCH, 14.
ENGLISH, 22.

## GENERAL INFORMATION RELATING TO EXAMINATIONS.

The regular examination for admission will begin on the day after Commencement, and continue through the two following days. A second examination will be held on the Tuesday, Wednesday, and Thursday preceding the beginning of the college year. The examination will begin at 9 o'clock A. M., on each of these days. The assignment of examination subjects appears in the Calendar, pages 4 and 5.

At the regular examination in June, those who will be candidates for admission to the Freshman class one year later may present themselves for a preliminary examination, if certified by their teachers to be prepared in not less than half of the number of subjects required for admission to the course proposed, and may receive certificates if they pass in not less than three quarters of the number of subjects presented. English may be presented at the final examination only.

For admission to advanced standing, an examination must be well sustained both in the preparatory studies and in the studies in which the candidate desires credit for advanced work.

The certificates of teachers in schools of good standing, whose courses have been approved, are accepted in lieu of an examination. To be received, the certificate (blank forms of which will be sent on application to the Registrar of the College) must specify which of the subjects have been pursued and to what extent, or what are offered as equivalents in case the preparatory course has differed from that presupposed in the foregoing requisitions, and must express the opinion of the teacher that the candidate is well prepared to enter upon a college course. Certificates must be in the hands of the Registrar at least four weeks before the beginning of the college year. Candidates so admitted will be regarded as upon a special probation, which may be terminated at any time if their preparation is found to be inadequate.

A fee of five dollars must be paid in advance by every candidate who is examined at any other place than the College.

# Requirements for Degrees.

Students may enter upon their work in the courses in Liberal Arts as candidates for the degree of Bachelor of Arts or for that of Bachelor of Philosophy, according to the examination group upon which they are admitted to the college. In either case the ground of promotion and of graduation is the intellectual attainment of the individual student, not a fixed requirement of a certain number of years of study. Candidates for the degree of Bachelor of Philosophy will be necessarily somewhat more limited in their selection of subjects because of the nature of their preparation. They may obtain the degree of Bachelor of Arts on the satisfactory completion of twenty-four term hours of additional work in approved elective subjects.

The plan of study offered to the student is at once liberal, controlled, and elastic. It combines the requirements of the general culture, which is the prime object of the undergraduate college course, with an opportunity for the development of the individual on the lines to which he is especially adapted, and for preparation for university and professional study. Throughout the course students have large liberty in choosing their work, but they are brought into personal advisory relations with the major instructors, who arrange and guide a considerable portion of their work after its general direction has been determined. A reasonable amount of guided specialization is thus provided for, while the personal relations of the student with the major instructor form a valuable adjunct to the routine work of instruction in developing the interest and the character of the students. All work actually accomplished by the student in regular standing counts toward the attainment of the degree. The period within which that may be attained depends upon the industry and ability of the individual student.

## SYNOPSIS OF THE REQUIREMENTS.

[NOTE.— Each department offers a series of subjects for study. The unit for indicating the requirements is the *term hour*, which represents the number of hours per week required in each subject, expressed for a period of one term. Thus a subject calling for three hours a week, for one term, represents a requirement of three term hours; if it calls for three hours a week for one year, the requirement in that subject is six term hours.]

(1) The requirement for the degree of Bachelor of Arts or Bachelor of Philosophy is the satisfactory completion of subjects aggregating one hundred and twenty-eight term hours.

(2) The program of prescribed studies is as follows: —

| | TERM HOURS. |
|---|---|
| LANGUAGES (Latin, Greek, French, German; each student to take *three*) . . . . . . . . . . | 18 |
| ENGLISH (Rhetoric, Composition, Themes, Oratory) . | 12 |
| MATHEMATICS . . . . . . . . . . . . . . . . | 6 |
| SCIENCE (Physics, Chemistry, Biology; each student to take *one*) . . . . . . . . . . . . . . . | 6 |
| MENTAL AND MORAL SCIENCES (Psychology, Logic, Ethics, History, Economics; each student to take *one full or two half* subjects) . . . . . . | 6 |
| PHYSICAL TRAINING . . . . . . . . . . . . . | 2 |
| A total of . . . . . . . . . . . . . . . . | 50 |

The requirements are by groups, not by special subjects, and in each group except English and Mathematics some choice is allowed the student.

The program of the student in the first year will be made up from the prescribed groups, but the prescribed work in the group of Mental and Moral Sciences cannot be taken before the second year except by special permission of the Faculty.

(3) At the end of the first year the student is required to choose a major department, in which he must complete, before graduation, work amounting to eighteen term hours. He may offer work already done in that subject in some one of the

prescribed groups as a part of the eighteen hours which he is required to give to his major department. The major department and the plan of work for the first half-year must be reported by the student, in the proper form, upon registration on the opening day of the college year.

(4) Acting under the advice of the instructor in his major department, the student shall make up a program of eighteen term hours in collateral subjects; that is, subjects tending to strengthen and assist his work in his major. The student's major instructor is to be his official adviser on general matters relating to his college course.

(5) The remaining forty-two term hours of the required aggregate are to be made up by the free election of the student from the various subjects offered, limited only by special restrictions applied to certain subjects.

(6) Upon the satisfactory completion of the aggregate requirement, the student is entitled to receive the Bachelor's degree, but no student shall be granted a degree in less than four years of residence, unless he shall have obtained Grade B as an average for his entire work.

### Summary.

| | | | |
|---|---|---|---|
| Prescribed work . . . . . . . . . . . . . | 50 | term | hours. |
| Major department . . . . . . . . . . . . | 18 | " | " |
| Collateral subjects . . . . . . . . . . . | 18 | " | " |
| Free electives . . . . . . . . . . . . . | 42 | " | " |
| | 128 | " | " |

# Departments of Instruction.

## MAJOR DEPARTMENTS.

Any of the following may be chosen as major departments : —

ENGLISH LITERATURE.
FRENCH.
GERMAN.
LATIN.
GREEK.
HISTORY.
POLITICAL SCIENCE.
MATHEMATICS.
PHYSICS.
CHEMISTRY.
BIOLOGY.
ENGINEERING.

In the subjoined statement of the work done in the different departments, the name of the major instructor is that given at the head of each department which offers a major course. In other cases the name is given of the instructor in general charge of the department. Names of instructors in charge of each subject are appended to the brief statement of the subject itself.

Bracketed subjects will not be given in 1894–95. In most cases alternates are indicated, which fill their places in the program for this year. All subjects continue through the year unless otherwise indicated.

A tabular view of the program of hours assigned to the subjects in the courses in Liberal Arts will be found on page 68. No two subjects assigned to the same hour can be taken simultaneously by any student.

## ENGLISH.

### PROFESSOR SHIPMAN.

The course of instruction in English aims at both theoretical knowledge and practical results. It begins with extemporaneous composition in the Freshman year. In this exercise, which is weekly, formal theme-writing is avoided. Topics are

assigned, with some variety of method, at the time of writing, usually not the same topic for all, but a list is furnished from which each writer may select, giving preference to what is nearest at hand and best understood. The brief essays are subject to criticism both in class and with the individual writers. With suitable modification, this extemporaneous writing is continued at intervals to the end of the course. The formal study of Rhetoric begins with the second year. A text-book is used as the basis of instruction, and is made, as far as possible, a help to the intelligent discussion of principles, rather than a burden to be carried. Rhetorical precepts are applied in the criticism of this course, and especially in composition, which is required to the middle of the third year. The student's work in literature and other departments of college study is made to furnish real occasion, as well as material, for the preparation of essays. The required Rhetoric may be followed by an elective course in some of its applications, or exclusively in composition.

### SUBJECTS.

**1.** — Composition, Lectures, Discussion of Papers. *One hour a week for the first year. Tuesday at* 2. PROFESSOR SHIPMAN.

**2.** — Rhetoric, with practical exercises. Second year. *Monday, Wednesday, and Friday at* 10.45 (*first half-year*). MR. WHITTEMORE.

**3.** — Composition and Themes. Second year. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. WHITTEMORE.

**4.** — Principles and Practice of Debate. Open to students who have completed 1, 2, and 3 or 5. *Tuesday and Thursday at* 8.45 (*first half-year*). PROFESSORS SHIPMAN AND MAULSBY.

**5.** — Daily Composition. Elective or optional, with 4. *Five themes weekly* (*either half-year*). PROFESSOR SHIPMAN AND MR. WHITTEMORE.

Subjects 1, 2, 3, and 5, or 4 will constitute, with Oratory 1, the prescribed work in English.

**6.** — Rhetoric (advanced course). Elective for students who have completed English 2, with 3 or 5. *Monday, Wednesday, and Friday at* 11.45 (*first half-year*). PROFESSOR SHIPMAN.

**7.** — Composition (advanced course). Elective for students who have completed the prescribed work in English. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*). PROFESSOR SHIPMAN.

## ORATORY.

### Professor Maulsby.

It is intended that the study of oratory shall be of practical benefit to the general student, whether or not he looks to professional pursuit of the art. Exercises are practised in correct breathing, the production of tone, and in gesture; moreover, individual faults are pointed out, and, so far as possible, remedies suggested. The required course aims at reading that shall be intelligent, natural, and forcible. Attempt is made to develop, both in voice and gesture, spontaneous expression from the mental side. In the elective course opportunity is given for individual presentation of selections from standard literature, and for practice in debate on subjects of current interest. Throughout the work the student meets the instructor personally, for rehearsal and criticism.

### SUBJECTS.

**1** (*a*). — Class exercises in vocalization and gesture; reading of one of Shakespeare's plays; individual recitation. *Tuesday at* 8.45.
Professor Maulsby.

**1** (*b*). — Class exercises in vocalization and gesture; study of selections from senatorial oratory; individual declamation. *Saturday at* 11.45.
Professor Maulsby.

**2** (*a*). — Study of selections from Shakespeare and Browning; frequent individual presentation of standard poetry and prose. *Friday at* 2.
Professor Maulsby.

**2** (*b*). — Practice in debate on subjects of local and national discussion. *Tuesday at* 2.
Professor Maulsby.

## ENGLISH LITERATURE.

### Professor Maulsby.

The study of our literature offers opportunity for acquaintance with the work of selected English writers, from the beginning to the present. Intelligent appreciation of the author's thought and of his characteristic mode of expression is the immediate result held in view. Biographical and philological details, the effect of environment, and the mass of published criticism that clusters about the great writers, are not neglected, although given a subordinate place. The ultimate object of the course is mainly the unmeasured yet positive culture that inheres in open-minded intercourse with the masters in literature. The method pursued demands attentive reading of much more than can be considered in the class-room, frequent written expression of literary judgments, and occasional private investigation of topics not otherwise treated. Students are advised to adhere as closely as possible to the order of subjects as indicated by the numbering. The library contains multiple copies of many of the authors read.

SUBJECTS.

[**1.** — Chaucer. *Monday, Wednesday, and Friday at* 3 (*first half-year*). PROFESSOR MAULSBY.]

Morris's edition of the Prologue is carefully read, followed by selected tales and minor poems. Attention is paid to the etymology of Chaucerian forms, and to comparison of the English of the fourteenth with that of the nineteenth century. An outline of the development of English literature from the beginning until Chaucer's day is given in lectures.

**2.** — Shakespeare. *Monday, Wednesday, and Friday at* 3 (*second half-year*). PROFESSOR MAULSBY.

The aim in the study of Shakespeare is first to understand him, then to appreciate his poetic and dramatic workmanship. The minute study of a few plays is followed by the rapid reading of nearly the whole of the remainder. An outline of the course of our literature from Chaucer to Milton is presented by lecture.

**3.** — The Classic Period. *Monday, Wednesday, and Friday at* 3 (*first half-year*). PROFESSOR MAULSBY.

Selected authors from Milton to Johnson are considered, with attempt to note and account for the essential resemblance in their styles. The lyric poets of the period are assigned for individual study. Subjects 1 and 3 are given in alternate years.

**4.** — The Revolutionary Period. *Monday, Wednesday, and Friday at* 9.45 (*second half-year*). PROFESSOR MAULSBY.

Selection is made from the following list for treatment in the class-room: Burns, Cowper, Byron, Shelley, Keats, Coleridge, Wordsworth, Landor, Lamb, De Quincey. Each member of the class makes a personal study of some other writer of the period.

**5.** — Victorian Authors. *Monday, Wednesday, and Friday at* 9.45 (*first half-year*). PROFESSOR MAULSBY.

The chief emphasis is placed upon Carlyle, Ruskin, Tennyson, and Browning, a part of the work of each being minutely studied, and a greater quantity rapidly read. Each member of the class presents a study in literary criticism, based upon copious reading of some contemporary writer.

[**6.** — American Literature. *Monday, Wednesday, and Friday at* 9.45 (*first half-year*). PROFESSOR MAULSBY.]

It is attempted in a single term to outline the history of literature in the United States, from its beginning until now, the less eminent figures being rapidly treated in lectures, in order that the more important names may receive due consideration. Subjects 5 and 6 are given in alternate years.

**7.** — Study of a Special Topic. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). PROFESSOR MAULSBY.

In successive years the following topics are studied: (*a*) the history of the drama, (*b*) the principles of literary criticism, (*c*) the development of the novel. the first of these being assigned for the current year. Unless applicants have pursued English literature for at least nine term hours, the permission of the instructor must be obtained in order to take this course.

**8.** — Anglo-Saxon. *Monday, Wednesday, and Friday at* 10.45 (*first-half-year*). PROFESSOR MAULSBY.

The aim is to read selections from the early monuments of the language, paying only so much attention to grammatical details as will subserve this end. A few lectures sketch the history of English.

[**9.** — Poetry and Drama of the Restoration. *Monday, Wednesday, and Friday at* 3 (*second half-year*).
Given in 1895–96. MR. WADE ]

Such topics as the origin of the heroic drama, Shakespeare during the Restoration, the influence of France, the reformation of the stage by Jeremy Collier, will be briefly treated in lectures, and parallel reading will be required in authors of the period. Throughout the course endeavor will be made to present a clear view of the social characteristics of the time as reflected in its literature, and to emphasize the religious, social, and moral transformation then in progress.

## GERMAN.

PROFESSOR FAY.

The aim of the department is twofold, according as the student has entered with the elementary or advanced requirement. In the former case it is to lead him in the briefest possible time to such a mastery of the language as will enable him to use it as a source of information, and medium of literary culture; where this preliminary work has already been done, to afford this literary culture itself, together with such historical and linguistic knowledge as may properly accompany advanced work in a literary department. Hence, in the elementary subjects, facility and accuracy of translation are sought by means of copious reading and careful grammatical drill; in the intermediate year the classic masterpieces are read for their own sake, together with such historical material as will throw light upon the epoch in which they were written or with which they deal; in the advanced work the systematic study of the history of the literature is undertaken, and opportunity is afforded for acquiring a knowledge of the earlier literary forms. Composition forms an important element in instruction and in the practice of the language. Though no attempt is made to teach the student to speak the language, he is trained from the outset to hear and to understand it when spoken, chiefly for the sake of the reflex influence of such practice upon pronunciation.

Six consecutive subjects are offered. While it is not impossible to take them all within the four college years, the scheme is based upon the supposition that the earlier ones will have been taken in the preparatory school.

### SUBJECTS.

**1.** — Elementary German. Joynes-Meissner Grammar, with Lewis's Exercises; Bernhardt's Im Zwielicht, II.; Riehl, Burg Neideck; Buchheim's Balladen und Romanzen. *Tuesday, Thursday, Saturday, at* 8.45.
Professor Fay.

German 1 is the equivalent of the entrance requirement in Elementary German, and should be taken in the Freshman year by all who enter with a condition in that subject.

**2.** — Intermediate German. Review of grammatical principles, especially of syntax, with advanced exercises in composition; Scheffel, Ekkehard (Wenckebach edition); Freytag, Der Rittmeister von Alt-Rosen, Aus dem Staat Friedrichs des Grossen; Buchheim's Deutsche Lyrik. *Tuesday, Thursday, Saturday, at* 9.45. Professor Fay.

German 2 is intended for those who have passed the examination in Elementary German. It is possible for a student who has excelled in the work of German 1, and who shall have done a prescribed amount of outside reading, to omit this course and enter German 3.

**3.** — First half-year. Work introductory to classic authors. Lessing, Minna von Barnhelm; Schiller, Die Jungfrau von Orleans; Goethe, Hermann und Dorothea. Second half-year. Work in the rapid reading of recent prose authors; one theme. *Monday, Wednesday, Friday, at* 9.45. PROFESSOR FAY.

Students who have passed their entrance examinations in Intermediate German continue their work in German 3. Those by whom a knowledge of the classic authors is especially desired may substitute the second half-year of German 4 for that of this subject. German 3 may be taken as an additional half-subject by more advanced students.

**4.** — Schiller and Goethe: Egmont, Maria Stuart, Wallenstein, with collateral readings in historical prose; two themes. *Tuesday, Thursday, Saturday, at* 11.45. PROFESSOR FAY.

German 4 is taken by those who pass the entrance examination in Advanced German. The last half-year's work in German 3 may be taken collaterally as a half-subject.

**5.** — Lessing and Goethe: Nathan der Weise, Laocoön, Tasso, Iphigenie auf Tauris, Faust, with collateral reading, especially from Düntzer's Commentaries. *Monday, Wednesday, Saturday, at* 11.45. PROFESSOR FAY.

**6.** — History of German Literature: Vilmar, Kluge, with illustrative works for leading epochs. Course in Middle High German: Das Nibelungenlied; Walther von der Vogelweide. A thesis is required of candidates for honors. *Monday, Wednesday, Friday, at* 10.45. PROFESSOR FAY.

## FRENCH.

### PROFESSOR FAY AND MR. LEWIS.

The plan and scope of the department are, in general, the same as those of the German department, to the statements of which the student is referred. Six consecutive subjects are offered.

**1.** — Elementary French. The essentials of grammar, with composition; Whitney's French Reader; Masson's French Classics, Vol. V.; during second half-year, collateral reading of short prose works. *Tuesday, Thursday, Saturday, at* 9.45. MR. LEWIS.

French 1 is the equivalent of the entrance requirement in Elementary French, and should be taken in the Freshman year by all who enter with a condition in that subject.

**2.** — Intermediate French. Reading, Grammar, and Composition. Review of grammatical principles, especially with reference to syntax; Exercises in Composition; Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière; Selections from Super's Readings from French History; Racine, Athalie; collateral reading of standard prose works. *Tuesday, Thursday, Saturday, at* 8.45. MR. LEWIS.

French 2 is intended for those who have passed the entrance examination in Elementary French. It is possible for a student who has excelled in the work of French 1, and who shall do a prescribed amount of outside reading, to omit this subject and enter French 3.

**3.** — First half-year. Introductory work in Seventeenth Century Classics. Corneille, Racine, Molière, Boileau, with collateral reading concerning the period. Second half-year. Course for the rapid reading of recent authors. *Monday, Wednesday, Friday, at* 8.45.
MR. LEWIS.

Students who have passed the entrance examination in Intermediate French continue their work in French 3. Those by whom a knowledge of the classic authors is especially desired may substitute the second half-year of French 4 for that of this course. French 3 may be taken as an additional half-subject by more advanced students.

**4.** — First half-year. Literature of the Eighteenth Century. The Novel, the Drama, Philosophical Essays. Second half-year. Literature and Manners of the Seventeenth Century. Crane's Société Française au XVII$^{e}$ Siècle; Molière, Les Précieuses Ridicules, Les Femmes Savantes; Saint-Simon; Madame de Sévigné. *Monday, Wednesday, Friday, at* 8.45. PROFESSOR FAY.

French 4 is taken by those who pass the entrance examination in Advanced French. Juniors and Seniors whose major department is French may be permitted to take 4 and 5 in the same year.

**5.** — Literature of the Nineteenth Century. The Drama, Poetry, the Novel, Criticism; Hugo, Lamartine, de Musset, Balzac, George Sand, Sainte-Beuve, Taine, and selections from contemporary authors. *Monday, Wednesday, Friday, at* 3. MR. LEWIS.

[**6.** — Demogeot, Littérature de la Langue Française, with illustrative texts for principal epochs. Course in Old French: La Chanson de Roland; Joinville, Histoire de Saint Louis. A thesis is required of candidates for honors. PROFESSOR FAY.]

## ITALIAN.

### PROFESSOR FAY.

The work offered in Italian is open to those only who have had two years of college study in French. With such previous training, the student is able to acquire with rapidity a reading knowledge of the language, and thus to become acquainted within the year with the characteristics of contemporary and classic literature.

### SUBJECT.

**1.** — Grandgent's Grammar and Composition; De Amicis, La Vita Militare; Maffei, Merope; Dante, Divina Commedia (Scartazzini's edition). *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR FAY.

## LATIN.

### PROFESSOR DEARBORN.

The work in this department is arranged with a view to giving students (1) a good knowledge of the Latin language and of a portion of its literature, and, as a result of careful and critical translation, greater facility and accuracy in the use of English; (2) an acquaintance with the early history of Rome, the fundamental principles of the Roman constitution, and the important features of the public and private life of the people, by reading Latin authors and by special study of these subjects; and (3) the mental training by which a man is better equipped for any pursuit in life, and the habit of independent study and research which is essential to all true scholarship.

In the early part of the work the forms and construction of the language are carefully studied. Translation, both oral and written, into appropriate English, holds an important place in all the work of the department. Reading without translation is practised to some extent. Considerable attention is given to the comparative etymology of Latin, Greek, and English. Lectures are given on the history of the Latin language and literature. The advanced work is especially adapted to the needs and attainments of those who elect the study, and more attention is given to the subject-matter and to the style and spirit of the authors read.

The work in Roman history and archæology is carried on by means of recitations, illustrated lectures, and private investigations by the students, the results of which are presented in brief essays and read and criticised before the class.

### SUBJECTS.

**1.** — Livy; Cicero, Cato Major; Horace; Antiquities and Legendary History of Rome, with illustrated lectures; lectures on the History of the Latin Language and Literature. *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR DEARBORN.

Latin 1 is introductory to all later subjects, and will be taken by those electing Latin as a prescribed language.

**2.** — Horace; Cicero, Tusculan Disputations; Tacitus, Germania and Agricola. *Monday, Wednesday, and Friday at* 11.45.
PROFESSOR DEARBORN.

**3.** — Juvenal; Pliny; Plautus; Classic Archæology and Art. *Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR DEARBORN.

**4.** — Cicero; Terence; Catullus; Quintilian. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR DEARBORN.

**5.** — Livy; Cicero; Latin Composition. *Wednesday and Friday at* 10.45. PROFESSOR DEARBORN.

Latin 5 is supplementary to Latin 1, and when taken should be taken simultaneously with in the Freshman year.

[**6.** — Roman satirists, with special reference to the works of Horace and Juvenal. *Tuesday and Thursday from* 4 to 5.30.
PROFESSOR GRAVES.]

**7.** — Terence (Andria, Adelphoe, Heauton Timorumenos, and Phormio); Plautus (Captivi, Menaechmi, Trinummus). *Tuesday and Thursday from* 4 *to* 5.30. PROFESSOR GRAVES.

Latin 6 and 7 are offered in alternate years, 7 being open in 1894–95. Although any one is eligible who has completed Latin 3, they are intended primarily for students in the graduate department. Lectures are given in 6 on the history of Roman satire and on the satirists, and in 7 on the development of the theatre, the *sermo plebeius*, and the styles of Plautus and Terence.

**8.** — Cicero (Brutus and Second Philippic); Plautus or Terence; Lucretius (Books I.–III.); Tacitus (Dialogue or Annals); Comparative Grammar of Greek and Latin (King and Cookson or Henry); History of the Latin Language and Literature. *Three hours a week.*
PROFESSOR DEARBORN.

This subject is for graduate students.

## GREEK.

### PROFESSORS SCHNEIDER AND GRAVES.

The aim of the department is to treat the Greek language not merely as a disciplinary instrument, but as a factor in the broadest and most liberal culture. Throughout the course the practice of reading at sight is encouraged, special effort being made to develop such facility that the student may resort with pleasure to the masterpieces of the Greek language, and find in them the delights and inspirations of a noble literature. To this end also considerable attention is paid to the style and literary characteristics of the authors read. The relations of Greek to the Latin, German, and English languages are discussed, and the course is shaped to develop, discipline, and enrich the linguistic resources of the student. Reading without translation is encouraged from the beginning. Incidentally, studies are made of the customs and daily life of the people. Discussion relative to the laws, philosophy, and religion of the Greeks is introduced, and some attempt is made to exhibit the indebtedness of modern civilization to Hellenism.

### SUBJECTS.

**1.** — Elementary. Goodwin's Grammar; White's Beginner's Book; Xenophon (Anabasis or Hellenica); Homer (Iliad I.–III.); Plato (Apology and Crito); Woodruff's Greek Composition. *Double subject. Monday, Wednesday, and Friday at* 11.45, *and Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR GRAVES.

Greek 1 is intended for students entering without Greek and wishing to begin the study of that language. It is assumed that their previous training in linguistic studies will enable them to proceed rapidly and accomplish in one year all the work usually done in preparation for college.

**2.** — Xenophon (Memorabilia or Cyropœdia); Herodotus (Books VI. and VII.); Homer (Phæacian Episode of the Odyssey); Sophocles (Antigone); Greek Composition. *Monday, Wednesday, and Friday at* 2. PROFESSOR GRAVES.

Greek 2 is the course for students entering with Greek. Particular attention is given to the syntax of the language and to the development of the dialects. Incidentally, study is made of the customs and daily life of the people. The course is supplemented by lectures on Greek literature, Hellenic antiquities, and on the literary characteristics of the authors read.

**3.** — Lysias (Selections); Antiphon (Herodes and Choreutes); Demosthenes (On the Crown); Euripides (Medea); Æschylus (Seven against Thebes); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. PROFESSOR GRAVES.

[**4.** — Andocides (Mysteries and On the Return); Isocrates (Panegyric); Æschines (Against Ctesiphon); Euripides (Hippolytus); Æschylus (Prometheus Bound); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. PROFESSOR GRAVES.]

Greek 3 and 4 are offered in alternate years and are open to those who have taken Greek 2. It is intended in either case to give the first term to the critical study of the orators and the second to the dramatists. Rhythm and metre are studied in connection with the dramatists, and moods and tenses with the orators. At suitable points, lectures on the laws, oratory, theatre, and religion of the Greeks are given.

**5.** — Theocritus (Idylls and Epigrams); Pindar (Olympian and Pythian Odes); Tyler's Selections from Greek Lyrics; reading at sight in the Odyssey. *Tuesday, Thursday, and Saturday at* 9.45.

PROFESSOR SCHNEIDER.

Greek 5 is open to those who have completed Greek 3 or 4. Much attention is paid to the development of Greek lyric poetry, and the various theories of rhythm and metre are discussed. Lectures on appropriate topics are given in connection with the work.

**6.** — Plato (Symposium); Aristotle (Ethics, Books I.–IV., or Politics); reading at sight in Herodotus and Lucian. *Monday, Wednesday, and Friday at* 2. PROFESSOR SCHNEIDER.

Greek 6 is open to those who have completed Greek 3 or 4. A critical study of the authors read is supplemented by a general survey of Greek philosophy.

**7.** — Topics in Greek History: reading at sight in Homer and Euripides; Greek Composition. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR GRAVES.

Greek 7 may be taken by any one who has had the equivalent of Greek 1. It is especially suited to Freshmen intending to elect Greek as their major.

**8.** — Demosthenes (Private, Hellenic, Olynthiac, and Philippic Orations); Sophocles (Plays and Fragments); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30. PROFESSOR GRAVES.

[**9.** — Study of the Sources of Greek History; critical reading of Herodotus, Thucydides, Xenophon, and Diodorus Siculus; Greek Composition. *Wednesday and Friday from* 4 *to* 5.30.

PROFESSOR GRAVES.]

[**10.** — Plato (Gorgias, Phaedo, Republic I.–V.); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30. PROFESSOR GRAVES.]

Greek 8, 9, and 10 are rotated, so that each is given every third year, 8 being the subject for 1895–96. These subjects are intended for those wishing to pursue graduate work in Classical Philology. They may, however, on permission from the instructor, be taken by any one who has completed Greek 3 or 4. Independent work is encouraged throughout, and theses are read and criticised by the students. Lectures are given in 8 on legal antiquities, in 9 on Greek history, and in 10 on the life, works, style, and philosophy of Plato.

## HEBREW.

### Professor Curtis.

Two subjects, each occupying two hours a week for a year, are offered in Hebrew, enabling the student to obtain a knowledge of the rudiments of the language, and, if desired, to pursue it further and obtain some knowledge of the literature. It will be noticed that these subjects are given in alternate years.

### SUBJECTS.

[**1.** — Rudiments of Hebrew Grammar; Vocabulary and Word Studies; Reading of Easy Prose, with Criticism. *Tuesday and Thursday at* 3. Professor Curtis.]

**2.** — Advanced Hebrew; Readings from Ancient, Middle, and Late Hebrew; Discussion of the Critical Questions involved. *Tuesday and Thursday at* 3. Professor Curtis.

## PHILOSOPHY.

### Professor Shipman.

In this department are included Logic, Psychology, Ethics, and the History of Philosophy. The department is not at present organized to offer a major course, but its work is coordinated and practically continuous. Consideration is given to Psychology from the standpoint of recent physico-psychological investigation as well as from the philosophical side. In Logic two half-subjects offer opportunity for a study both of deduction and of induction. The work in the History of Philosophy continues through one year, and is so far extended as to include various recent discussions.

The work in Ethics embraces the study of ethical theory and practice. In addition to recitations from the text-book, students conduct their own investigations, under the direction of the teacher, and embody the results of the same in theses. Considerable time is spent in the discussion of ethical principles, and in the comparison and criticism of modern ethical doctrines.

The study of the Philosophy of Religion begins with a classification of the great questions in Theology, thus giving an outline history of doctrines, with emphasis on their logical relations. The next step is the testing of the chief doctrines by known scientific facts. Lastly, the results are arranged on scientific principles. The method includes library work, with references to the writings of the leaders of theological thought in all historic times.

Lectures and criticisms in the class-room supplement the students' personal investigations.

SUBJECTS.

**1.** — Psychology. Manifestations of Mind through Consciousness. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*).
Professor Shipman.

**2.** — Physical Psychology. *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*).
Professor Shipman.

The first subject presents psychology in its historical relations, studies the manifestations of mind through consciousness, in the manifold products of individual and collective activity, and prepares the way for Philosophy. The second deals with the methods and results of recent psychological investigation, with psychology as a branch of physics.

**3.** — Logic, especially Deductive, with an elementary consideration of fallacies. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*).
Professor Shipman.

**4.** — Logic (advanced course), especially Inductive. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*).
Professor Shipman.

Much attention is paid to practical exercises. Philosophy 4 is open only to such students as have satisfactorily completed 3. In it fallacies are discussed at much greater length and recent modifications of logical doctrine are examined.

**5.** — Ethics; Calderwood's Moral Science, with references to Kant's Metaphysic of Ethics and Ueberweg's History of Philosophy. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*).
Professor Shipman.

**6.** — Practical Ethics. Contemporary Problems, Education, Charities, Temperance, Socialism. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). PROFESSOR TOUSEY.

Philosophy 6 follows 5 in natural sequence, as the application of ethical theory to the practical questions of the day, but the practical side is not neglected in 5.

**7.** — The History of Philosophy. *Monday, Wednesday, and Friday at* 2. PROFESSOR SHIPMAN.

The discussion includes the problems of philosophy and the spirit in which it should be pursued, and this is followed by an outline of the general history of philosophy and by specific study of one or more systems.

**8.** — The Philosophy of Religion. *Monday, Wednesday, and Friday at* 3 (*first half-year*). PROFESSOR KNIGHT.

## HISTORY.

MR. START.

The work of this department is so arranged that the student may obtain a general knowledge of the significance, sources, and methods of history, and of the large facts in the development of civilization, passing from this to a more thorough study of limited periods. The essential unity of history is kept constantly in view, as well as the bearing of the experience of the past upon the conditions and problems of to-day, especially in our own country. Much of the instruction is by lectures, but independent work on the part of the student is sought through the study of special topics, references for parallel readings, the preparation of theses, and by general class discussions. The aim is not so much the accumulation of a great mass of facts, as an adequate comprehension of the meaning of significant historical events, and of the method to be employed in collating and using them.

Major students in History should acquire a working knowledge of German and French, at least, among the languages. Psychology and Political Science are important collaterals. Knowledge of Literature, Philosophy, and of the natural sciences, especially of Biology, are also of great value, and in some cases requisite for successful historical investigation.

SUBJECTS.

**1.** — Introductory study of General History and Historical Method. Lectures and theses. *Tuesday, Thursday, and Saturday at* 10 45 (*first half-year*). MR. START.

History 1 is introductory to all succeeding subjects in History, and must be taken by students wishing to go on with the latter. It is intended to give a general knowledge of the nature and progress of civilization, and the means by which it is studied. Complete in itself, it is the foundation for special study of limited periods. It is prescribed for Junior engineering students and is open for election by all others. It will not be accepted for an advanced degree.

**2.** — European History since 1648. The political revolution and formation of modern states. Lectures, parallel readings, theses, and topical work. Open to students who have completed History 1. *Monday, Wednesday, and Friday at* 10.45 (*first half-year*).
MR. START.

**4.** — American Colonial History. Spain, France, and England in the New World. The formation and social and political life of the colonies. Lectures, parallel readings, theses, and topical work. Open to students who have taken History 1. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. START.

**5.** — Political and Constitutional History of the United States. The Revolution, formation of the Union, development of the Nation under the Constitution. Lectures, study of sources, and literature, theses, and topical work. Open to students who have taken History 1 and 4. *Monday, Wednesday, and Friday at* 8.45. MR. START.

History 4 and 5 form a connected course in the history of our own country from the opening of the New World to the present time. While this is not made a necessary condition, it is desirable that they be preceded by History 2.

**8.** — The Comparative History of Religions. Egypt, Babylon, Nineveh; Parseeism, Hinduism, Buddhism, Confucianism, Mohammedanism; with a study of the civilizations represented by these religions. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*).
PROFESSOR KNIGHT.

**9.** — Seminary in American History. Research work with the sources. Open to major students in History who have completed twelve term hours of work in the department. *Full subject; meetings weekly or fortnightly, at the pleasure of the instructor.* MR. START.

In the seminary each student becomes an active historical investigator, examining the sources upon which history is based, and obtaining by personal experience an insight into the principles of research and criticism. Work of sufficient value done in the seminary will be preserved in the college library.

**10.** — The History of To-day. Practical work in examining, classifying, and preparing for reading and study the history of the current year. Consideration of principles of criticism, and laws of evidence. *Open only to resident graduates who have taken History* 9. MR. START.

This subject, for graduate students, is intended to bring to bear the critical faculty and scientific historical principles upon the progress and the questions of to-day, and incidentally to prepare material which may be of value in the study of our history at a later time. Hence it is only offered to graduates who have done special work in History. It may be taken by graduate students from other colleges who have done undergraduate work equivalent to that required of graduates of Tufts College. It is believed that it will be a useful introduction to journalism, law, the Christian ministry, or to a life of public activity as well as valuable for the historical specialist.

## POLITICAL SCIENCE.

### PRESIDENT CAPEN.

In this department are included Ancient and International Law and Economics. In the study of Ancient Law the object is, first, to determine the nature of primitive jural conceptions, and, as far as possible, to ascertain how they have arisen and on what they are founded; then, to trace the transformations which these conceptions have undergone, particularly in the Roman jurisprudence and the legal systems that have a Roman root. The effect which legal speculations and doctrines have had, not only upon modes of procedure, but upon civil institutions, political principles, social and domestic life, is carefully studied. International Law follows in the second term. So far as the time allows, a treatment of the subject that is at once broad and practical is sought.

The subject of Political Economy begins with an historical survey, the object being to trace the growth of economic ideas from the beginning, and to note the phases they have assumed among different peoples in the modern world. Then follows a consideration of the fundamental principles of economics.

Students are assigned the task of making practical application of principles to the solution of present economic problems. Time is given to subjects of immediate and living interest, such as the labor question, socialism, the tenure of land, taxation, and finance.

Special work will be arranged in connection with some of the problems of government for those who take Political Science as a major subject, and who have completed 1, 2, and 3.

### SUBJECTS.

**1.** — Political Economy. Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, lectures, and independent investigation dealing with the History of Economics, Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Tuesday, Thursday, and Saturday at* 8.45.
President Capen.

**2.** — Ancient Law; Roman Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*).
President Capen.

**3.** — International Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*).
President Capen.

**4.** — Special work in problems of Government for students electing Political Science as a major department. President Capen.

## MATHEMATICS.

### Professor Brown.

The study of Mathematics is required through the first year. The branches taught are: Algebra, through the subjects included in most college text-books previous to the theory of equations; Solid and Spherical Geometry; Plane Trigonometry, with its applications. Two objects are kept constantly in view: first, to acquire and hold certain mathematical facts for future use; secondly and mainly, to train the mathematical faculties so that the student may acquire the ability to deduce mathematical truths from those previously established. The class-room work of the instructor is a combination of lectures with questioning of the students to ascertain that the points presented are duly comprehended.

An opportunity to continue the study of Algebra and also a course in Determinants are offered at the middle of the first year. Plane Analytic Geometry is offered as an elective for the first half of the second year. This study may be continued with higher plane curves and Geometry of three dimensions during the second half of the second year. Differential and Integral Calculus is required for three half-years in the Engineering courses, and the subject is open as an elective to any student who has taken Plane Analytic Geometry.

### SUBJECTS.

**1.** — Wells's College Algebra; Baker's Solid Geometry; Hobson and Jessop's Trigonometry; applications of Trigonometry. Required of students in all courses. *Monday, Wednesday, and Friday at* 9.45.
PROFESSOR BROWN.

**2.** — Theory of Equations and Elements of Determinants. *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*).

**3.** — Nichols's Analytic Geometry. *Monday, Wednesday, and Friday at* 11.45 (*first half-year*). PROFESSOR BROWN.

**4.** — Higher Plane Curves; Analytic Geometry of Three Dimensions. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*).
PROFESSOR BROWN.

**5.** — Differential and Integral Calculus, Osborne's. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR BROWN.

**6.** — Differential and Integral Calculus (advanced course). *Monday, Wednesday, and Friday at* 10.45. PROFESSOR BROWN.

**7.** — Theory of Equations and Determinants; Weld's Theory of Determinants; Hanus's Elements of Determinants. *Monday, Wednesday, and Friday at* 8.45 (*second half-year*). PROFESSOR BROWN.

## PHYSICS.

PROFESSOR DOLBEAR.

The work in Physics begins with a consideration of General Physics, this being the subject to be taken by those electing Physics for their prescribed work in science, and the introductory subject for major students in Physics. A text-book is used, critical comments and much additional material are given, and frequent lectures are given with experiments. The aim is to present the science of Physics not as a series of detached subjects, but as a consistent body of doctrine in which mechanical principles hold throughout, and from which all the various phenomena are deducible. Hence in each branch there are frequent returns to these first principles. The rapid development of electrical science having quite outstripped text-books, this subject is treated wholly by lectures.

An elective course is offered of about twenty-five lectures upon the relations of Physics to other branches of natural science, introducing the doctrine of the conservation of energy as applicable to all. After this follows a more extended consideration of the fundamental questions in Physics. Spencer's First Principles is read, and its subject-matter thoroughly discussed.

In the Physical Laboratory beginners are given Stewart and Gee's Practical Physics, first volume, for a guide. They work for the most part independently, and each pursues a given subject till satisfactory results are obtained. Glazebrook and Shaw's Practical Physics is followed on the subjects of sound, heat, and light; Pickering's Manipulation and Kohlrausch's Measurements being also used to a limited extent. In electricity and magnetism Stewart and Gee's second volume is mainly followed, supplemented, in the case of engineering students, by parts of Gray's Absolute Measurements and Kempe's Testing. In all laboratory work each student records methods and results in a suitable note book, and is encouraged to do a few things well rather than to go carelessly over a larger ground. Students who are preparing themselves to become teachers of Physics have an opportunity to perform most of the experiments needed for illustrating elementary work.

### SUBJECTS.

1. — General Physics. Lectures, recitations, and experiments. To be taken by students choosing Physics for their prescribed science subject, and introductory to other subjects in Physics. *Monday, Wednesday, and Friday at* 10.45. PROFESSOR DOLBEAR.

**2.** — Electricity and Magnetism; Heat; Light; work in Laboratory. *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR DOLBEAR.

**3.** — Advanced Studies in Electricity, Heat, and Light, with experimental work in each. *Monday, Wednesday, and Friday at* 9.45. PROFESSOR DOLBEAR.

**4.** — Physical Laboratory. Mechanics, Sound, Heat, and Light. *Six hours a week (second half-year).* MR. MYRICK.

**5.** — Electricity: Theory of Measurements. *Two hours a week.* Electrical Laboratory: Simple Measurements and Tests. *Four hours a week.* MR. MYRICK.

**6.** — Electricity. Thompson's Dynamos; Kapp's Electrical Transmission of Energy. Recitations and lectures. *Three hours a week (second half-year).* PROFESSOR HOOPER.

**7.** — Pearson's Grammar of Science. Recitations and lectures. *Tuesday and Thursday at* 2 (*first half-year*). PROFESSOR DOLBEAR.

**8.** — Spencer's First Principles. *Tuesday and Thursday at* 2 (*second half-year*). PROFESSOR DOLBEAR.

**9.** — Electricity (advanced work). Alternating Currents. Fleming, Bedell, and Crehore. *Three hours a week.* PROFESSOR HOOPER.

**10.** — Electrical Laboratory (advanced course). Tests of Dynamos, Motors, Accumulators, Camps. PROFESSOR HOOPER.

## CHEMISTRY.

PROFESSOR MICHAEL.

The work in this department begins with the subject of General Chemistry, which is open for election by the students of the courses in Liberal Arts and is required of engineering students in their second year. The instruction is by means of lectures, recitations, and laboratory work. The lectures, illustrated by numerous experiments, are intended to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including a brief account of the chemistry of the carbon compounds and the principal technical processes. One half of the time devoted to this subject is given to practical work in the laboratory, where the student will have an opportunity to verify some of the chemical theories and to become familiar with substances and their chemical behavior. The lectures are supplemented by recitations and written examinations. The work in Organic Chemistry is conducted on a similar plan, while that in Analytical Chemistry is based largely on practical work in the laboratory. For those students who may wish to specialize in Chemistry, there are two advanced subjects, and opportunity for advanced laboratory and research work in Chemistry is also provided.

### SUBJECTS.

**1.** — General Chemistry. Lectures, recitations, and laboratory work. *Monday at* 2; *laboratory, Wednesday and Friday from* 2 *to* 4.
MR. DURKEE.

**2.** — Qualitative Analysis; Basic and Acid Analysis; Analysis of Salts and Natural Products. *Laboratory, Tuesday and Thursday from* 2 *to* 5.
MR. DURKEE.

**3.** — Quantitative Analysis; Gravimetric and Volumetric Analysis; Analysis of Ores. *Laboratory, Tuesday and Thursday from* 2 *to* 5.
DR. CLARK.

**4.** — Quantitative Analysis (advanced course); Analysis of Water, Food Products, etc. *Laboratory, Tuesday and Thursday from* 2 *to* 5.
DR. CLARK.

**5.** — Metallurgy and Assaying. Lectures, recitations, and laboratory work.
MR. DURKEE.

**6.** — Organic Chemistry. Lectures, recitations, and laboratory work. (*Second half-year*).
DR. BUCHER.

**7.** — Theoretical and Inorganic Chemistry (advanced course). Open to students who have taken 1, 2, and 3. *Three hours a week* (*first half-year*).
PROFESSOR MICHAEL.

**8.** — Organic Chemistry (advanced work). Open to students who have taken 1, 2, and 3. *Three hours a week* (*second half-year*).
PROFESSOR MICHAEL.

**9.** — Laboratory work in advanced Inorganic and Organic Chemistry. *Hours to be arranged by the instructor.*
PROFESSOR MICHAEL.

**10.** — Original investigations in Chemistry. *Hours to be arranged by the instructor.*
PROFESSOR MICHAEL.

## BIOLOGY.

### PROFESSOR KINGSLEY.

The work in Biology begins with the general study of the structure and physiology of selected types of animals and plants. This subject is required of all students electing work in the biological department. After this subject, work is outlined for the students according to their need and desires. Botany and Zoölogy are taught as continuations of the course in General Biology, while the work in Physiology, Histology, and Embryology is intended as preparatory to a medical education. Instruction is given by lectures and by laboratory work, the object being to impart the scientific method rather than a large number of unimportant facts. Provision is also made for more extended study and for original investigation, and students will be encouraged to continue their work in this department by means of research on special problems. The equipment of the department is good, including microscopes, microtomes, reagents, preparations for the microscope, diagrams, at well as abundant material for illustration and dissection. There is also a department library of 800 volumes and over 1,200 pamphlets, while the College Library contains the proceedings of many learned societies both American and foreign. Besides these, proximity to Boston and Cambridge gives easy access to abundant library facilities.

### SUBJECTS.

**1.** — General Biology. *Lectures, Tuesday and Thursday at* 11.45; *laboratory, Tuesday and Thursday from* 2 *to* 4.

PROFESSOR KINGSLEY.

This subject is required of all students taking Biology for their prescribed work in science, and is introductory to all other subjects in Biology.

**2.** — Elementary Physiology. Lectures, demonstrations, and recitations. *Tuesday, Thursday, and Saturday at* 8.45 (*first half-year*).

PROFESSOR KINGSLEY.

This subject is offered as a collateral and elective only. Subjects 1 and 2 will not be accepted as work for advanced degrees.

**3.** — Comparative Anatomy of Animals; a continuation of the animal dissection of Biology 1. Six hours of Laboratory work. *Monday, Wednesday, and Friday from* 2 *to* 4 (*first half-year*).

PROFESSOR KINGSLEY.

**4.** — Botany; a continuation of the study of plants of Biology 1. Six hours of laboratory work. *Monday, Wednesday, and Friday from* 2 *to* 4 (*second half-year*). PROFESSOR KINGSLEY.

**5.** — Histology; a study of the normal tissues of the vertebrates, including microscopical technique. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.*
PROFESSOR KINGSLEY.

**6.** — Embryology. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.* PROFESSOR KINGSLEY.

**7.** — The History of Zoölogy. One lecture a week for the first half-year. PROFESSOR KINGSLEY.

This course of lectures, given in the evening, is open to the public, and is intended to outline the history of our knowledge of the animal kingdom and to include the elements of the various theories connected with the organic world. Attendance on this course does not count toward a degree.

**8.** — Special Work. Six hours of laboratory work for the year in the investigation of some special problem. PROFESSOR KINGSLEY.

**9.** — General Morphology. Three lectures each week upon the anatomy, physiology, and embryology of selected groups, with discussion of special problems. Open only to advanced students. *Tuesday, Thursday, and Saturday at* 8.45 (*second half-year*).
PROFESSOR KINGSLEY.

## GEOLOGY.

PROFESSOR MARSHALL.

The regular work in Geology is preceded by that in Mineralogy, given during the first half-year. The instruction is given by lectures and practical work in the mineralogical laboratory, which is furnished with the apparatus needed for the qualitative determination of minerals and the quantitative analysis of the ores of the precious metals. A good collection of minerals, systematically arranged in wall-cases, is accessible to the student for practical use, while a much larger collection of finer specimens on exhibition in the Museum may also be consulted.

The course in Descriptive Geology given during the second half-year presupposes a knowledge of Mineralogy, and is given by means of text-books and lectures, illustrated by models, charts, maps, and drawings upon the blackboard. Soon after beginning, practical work in Lithology is taken up, by which the student becomes familiar with the constituents of the common rocks. A spectroscope, a lithological microscope, and rock-sectioning apparatus are provided for a more thorough examination of rocks and minerals. The subject of Palæontology is taken up in the latter part of the year, and illustrated by a systematic collection of fossils in the Museum. Excursions to various localities in the neighborhood are offered the students, where the more common geological phenomena can be profitably studied *in situ.*

### SUBJECTS.

**1.** — Mineralogy; Blow-pipe Analysis. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*). PROFESSOR MARSHALL.

**2.** — Geology, Lithology, and Palæontology. Lectures, recitations, and laboratory work. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*). PROFESSOR MARSHALL.

## ASTRONOMY.

**1.** — Recitations and Lectures, chiefly on Physical and Descriptive Astronomy, with special attention to the later discoveries, and their interpretation as bearing upon the history of the earth. *Tuesday and Thursday at* 11.45 (*first half-year.*) PROFESSOR DOLBEAR.

## DRAWING.

### PROFESSOR ANTHONY.

The object of the studies pursued in this department is threefold: first, a development of the theory of technical drawing; second, the acquirement of precision and rapidity in the execution of the work; third, a practical application of these principles to the fluent expression of mechanical ideas by means of graphic language. Practice in the attainment of the first is acquired by Freehand and Geometric Drawing and the study of Descriptive Geometry. By means of progressive problems, in which nothing in the nature of a copy is permitted, the student is advanced to the consideration of point, line, and surface from a purely analytic standpoint. The instruction in Descriptive Geometry is given by means of lectures and recitations, accompanied by frequent examinations in the freehand and instrumental construction of the problems. Rapidity of work being attained only through precision, drawings are required to be executed with the greatest possible care and neatness. The theory and execution of a drawing having been mastered, the student is directed to make such applications of these principles to the illustration of mechanism as shall enable him graphically to express his ideas in the most simple and direct manner. The machine drawings are made by such systems as would be required in any well-conducted drafting-room, and the most modern methods are employed in the execution of the work and in the forms of graphic expression that may be used.

### SUBJECTS.

**1.** — Descriptive Geometry. Lectures, recitations, and drawing. *Four hours a week* (*second half-year*).
PROFESSOR ANTHONY, MR. DANIELS.

**2.** — Mechanical Drawing. (See Engineering Courses.) *Three hours a week for the year.* PROFESSOR ANTHONY, MR. DANIELS.

**3.** — Machine Drawing; Gearing, Elements of Design. *Two hours a week for the year.* PROFESSOR ANTHONY.

**4.** — Freehand drawing. *Two hours a week* (*first half-year*).
MR. DANIELS.

**5.** — Topographical Drawing, with Field Work, Chain, Compass, Level, and Transit. *Three hours a week for the year.*
MR. DANIELS.

## ENGINEERING.

### PROFESSOR BRAY.

There are offered in this department such selected subjects from the Engineering Courses as may be profitably pursued by students in the courses in Liberal Arts, who have taken the necessary preliminary work in Mathematics, and who may desire to shape their work with reference to pursuing study in Engineering after graduation. Such students will also find subjects adapted to their plans in the departments of Mathematics, Physics, Chemistry, and Drawing. Fuller details of the work in Engineering will be found in the statement of the full Engineering Courses. For all the subjects given below, Algebra, Geometry, and Trigonometry are an indispensable preparation.

### SUBJECTS.

**1.** — Land Surveying. Lectures, recitations, and field practice. Plotting and calculating. *Two hours a week (first half-year).*
MR. DANIELS.

**2.** — Topography. Lectures, recitations, drawing, and field practice. *Two hours a week (first half-year).* MR. DANIELS.

This subject must be preceded by 1.

**3.** — City and Mining Surveying. Recitations, field and office work. *Three hours a week (second half-year).* MR. DANIELS.

**4.** — Railroad Surveying. Field practice and office work; drawing and calculating. *Two hours a week (first half-year).* MR. DANIELS.

Subjects 3 and 4 must be preceded by 1 and 2.

**5.** — Steam Enginery; practice in the management of engines and boilers, valve-setting, etc. *Three hours a week (first half-year).*
MR. SANBORN.

**6.** — Thermo-dynamics. *Three hours a week (second half-year).*
MR. SANBORN.

**7.** — Applied Mechanics. *Three hours a week (second and first half-years).* PROFESSOR BRAY.

Subjects 6 and 7 must be preceded by Calculus.

**8.** — Steam Engineering. Mechanics of the Steam Engine. Dimensions and proportions of engines and boilers; valve gears; engine testing; preparation of designs and specifications. *Five hours a week (first half-year); three hours a week (second half-year).*
PROFESSOR BRAY.

This must be preceded by Mechanical Drawing and Engineering 5, 6, and 7.

**9.** — Roads and Railroads, to be taken with 4. *Three hours a week (first half-year); two hours a week (second half-year).* PROFESSOR BRAY.

**10.** — Hydraulics. *Three hours a week (second half-year).*
PROFESSOR BRAY.

**11.** — Bridges and Roofs. *Two hours a week (second half-year).*
MR. DANIELS.

**12.** — Masonry Construction. *Three hours a week (second half-year).*
PROFESSOR BRAY.

Subjects 10, 11, and 12, must be preceded by 7.

**13.** — Marine Engineering. PROFESSOR BRAY.

This subject is open as an elective to those students who are prepared for it and may be taken by regular students in Mechanical Engineering who wish to specialize in their Senior year. Students in

Marine Engineering are required to spend their summer vacations in the engine department of a steam vessel, and on the completion of their course and one year's service in the engine department of a steam vessel, may receive United States licenses to serve as engineers on steam vessels.

## PHYSICAL TRAINING.

### Mr. Durkee.

Regular exercise in the gymnasium is required three hours a week of men students for the two years following entrance, from the middle of November to the middle of March. The work in physical training is optional during the remaining years of the course. The kind of exercise prescribed for each man depends on his physical condition, as determined by careful medical examination, measurements, and strength tests. The special exercises of each student are directed by the instructor; the general exercises are in classes. The class work consists of free movements, exercises with wands and light dumb-bells, and on the parallel bars, vaulting-bar, and vaulting-horse. It is the intention in all cases to make the exercises of such a character that the weakest as well as the strongest person can perform them with profit.

# Program Groups.

The arrangement of recitation hours of such subjects as have fixed hours assigned them, is shown in the subjoined table. Hours for laboratory work and for advanced subjects, not given in the table, are subject to arrangement with the instructor. No student is allowed to take more than one subject in any of these groups, except in the case of half-subjects that are not given in the same half-year. Such subjects are indicated by the small roman numerals (i) or (ii) following the name of the subject and showing the half-year in which it is given. The days of the week are indicated by the abbreviations M., Tu., W., Th., F., and S.

(M. W. F. at 8.45.)
French 3.
French 4.
History 5.
Mathematics 7 (ii).

(M. W. F. at 9.45.)
English Lit. 4 (ii).
English Lit. 5 or 6 (i).
German 3.
Mathematics 1.
Physics 3.

(M. W. F. at 10.45.)
English 2 (i).
English 3 (ii).
English Lit. 8 (i).
English Lit. 7 (ii).
German 6.
Latin 5 (W. F.).
History 2 (i).
History 4 (ii).
Mathematics 6 (ii).
Physics 1.

(M. W. F. at 11.45.)
English 6 (i).
English 7 (ii).
German 5.
Latin 2.
Greek 1.
Mathematics 3 (i).
Mathematics 4 (ii).

(M. W. F. at 2.)
Oratory 2 *a* (F.).
Greek 2.
Greek 6.
Philosophy 7.
Chemistry 1 (lect. M. lab. W. F.).
Biology 3, 4, 5, 6, 8 (lab.).

(M. W. F. at 3.)
English Lit. 1 or 3 (i).
English Lit. 2 (ii).
French 5.
Philosophy 8.
Chemistry 1 (lab. W. F.).
Biology 3, 4, 5, 6, 8 (lab.).

(M. W. F. at 4.)
Greek 8, 9 or 10 (W. F.).
Physical Training (Nov. 15 to March 15).

(Tu. Th. S. at 8.45.)
English 4 (i) (Tu. Th.).
Oratory 1 *a* (Tu.).
German 2.
French 2.
Latin 4.
Greek 7.
Political Science 1.
Mathematics 5 (ii) (i).
Biology 2 (i).
Biology 9 (ii).

(Tu. Th. S. at 9.45.)
German 1.
French 1.
Latin 3.
Greek 1.
Greek 5.
Political Science 2 (i).
Political Science 3 (ii).
Geology 1 (i).
Geology 2 (ii).

(Tu. Th. S. at 10.45.)
Italian.
Latin 1.
Philosophy 3 (ii).
Philosophy 4 (i).
Philosophy 5 (i).
Philosophy 6 (ii).
History 1.
Physics 2.

(Tu. Th. S. at 11.45.)
Oratory 1 *b* (S.).
German 4.
Greek 3 or 4.
Philosophy 1 (i).
Philosophy 2 (ii).
History 8 (i).
Mathematics 2 (ii).
Astronomy.
Biology 1 (lect. Tu. Th.).

(Tu. Th. at 2.)
English 1 (Tu.).
Oratory 2 *b* (Tu.).
Physics 7 (i).
Physics 8 (ii).
Chemistry 2, 3, 4 (lab.).
Biology 1 (lab.).

(Tu. Th. at 3.)
Hebrew 1 or 2.
Chemistry 2, 3, 4 (lab.).
Biology 1 (lab.).

(Tu. Th. at 4.)
Latin 6 or 7.
Chemistry 2, 3, 4 (lab.).

# Engineering Courses.

Three courses in Engineering are provided, each occupying four years.

The course in Electrical Engineering leads to the degree of Bachelor of Electrical Engineering, which is granted after the satisfactory completion of the work prescribed. The degrees of Bachelor of Civil Engineering and Bachelor of Mechanical Engineering are given on the same conditions to students who have pursued the courses in Civil and Mechanical Engineering. It is believed that four years, spent mainly upon technical subjects, yet providing opportunity for such language study as will enable the student to become familiar with foreign books of scientific value, will furnish a solid foundation for advanced theoretical attainment and professional skill.

Students of the Courses in Liberal Arts may so arrange their elective work as to make it possible to obtain either of the degrees mentioned above upon the completion of one year's graduate study.

Modern Languages.—An elementary knowledge of French or German is required (see pages 29 and 31) of all candidates for admission to the Engineering Department. While each student will be assigned, upon entrance, to such class as his proficiency warrants, it is in general expected that those who present merely an elementary requirement will continue through the Freshman year the study of the language presented. At the end of this period, students who have acquired the ability to utilize for research works in the language hitherto studied may begin the study of the alternate language; but no one will be permitted to begin the study of German later than the Sophomore year, except by special permission, and with the understanding that the requirement of nine term-hours on the subject is to be met by extra work. The courses in French and German are, in general, similar to those described on pages 45 to 47 (general statement).

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Students in the three branches of Engineering follow the same plan of work for the first two years.

## FRESHMAN YEAR.

### First Term.

**Mathematics.** — Advanced Algebra; Spherical Geometry; Plain Trigonometry. *Six hours a week.* MR. MYRICK.

**Mechanical Drawing.** — Geometric Drawing; Orthographic Projection. *Three hours a week.* MR. DANIELS.

**Freehand Drawing.** — Lettering, Model Drawing, Technical Sketching. *Two hours a week.* PROFESSOR ANTHONY AND MR. DANIELS.

**Shop Work.** — Woodwork; Carpentry; Turning; Pattern-Making. *Two hours a week.*

**Rhetoric.** — Elementary Rhetoric and Composition. *Three hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Spherical Trigonometry. *Three hours a week.* MR. MYRICK.

**Mechanics.** — Lectures on Elementary Mechanics, with problems. *Two hours a week.* PROFESSOR HOOPER.

**Mechanical Drawing.** — Orthographic, Isometric, and Oblique Projection; Screw Threads; Bolts and Nuts; Tracing and Blue-printing. *Three hours a week.* MR. DANIELS.

**Descriptive Geometry.** — Lectures, recitations, and drawing. *Four hours a week.* PROFESSOR ANTHONY AND MR. DANIELS.

**Shop Work.** — Pattern-Making; Moulding. *One hour a week.*

**Composition.** — *Two hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

## SOPHOMORE YEAR.

### First Term.

**Mathematics.** — Analytic Geometry. *Two hours a week.* MR. WREN.

**Drawing.** — Machine Drawing; Elements of Mechanism. *Three hours a week.* PROFESSOR ANTHONY and MR. SANBORN.

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* See remarks on Modern Languages, page 69.

**Shop Work.** — Pattern Making. *One hour a week.*

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Chemistry.** — Inorganic Chemistry, with recitations, lectures, and laboratory work. *Four hours a week.* MR. DURKEE.

**Surveying.** — Recitations and lectures. Field practice; plotting and calculating. *Two hours a week.* MR. DANIELS.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.* MR. SANBORN.

**Drawing.** — Machine Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**Shop Work.** — Blacksmithing; Forging of Iron and Steel. *Two hours a week.*

**Physics.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Physical Laboratory.** — Mechanics; Sound, Heat, and Light. *Three hours a week.* MR. MYRICK.

**Rhetoric.** — *Three hours a week.* MR. WHITTEMORE.

**Chemistry.**

**French or German.** — *Three hours a week.**

## ELECTRICAL ENGINEERING.

The aim of the course in this department, leading to the degree of Bachelor of Electrical Engineering, is to fit men to deal intelligently with all electrical problems likely to be presented to the practical engineer. With this end in view, Mathematics and Drawing are pursued through nearly the entire course. Physics and Mechanics, both pure and applied, receive much attention, while more than half of the fourth year is devoted to the study of Electricity, by means of practical work in the electrical laboratory, together with recitations and lectures on the principles involved. The purely electrical work extends over the Junior and Senior years of the course; the Junior year being devoted to the more elementary theory and the practice of the simpler tests and measurements; the Senior year to the more advanced theory and the practice of the more complex tests and measurements.

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* See remarks on Modern Languages, page 69.

In the electrical laboratory each student is required to complete a fixed program of work. In the Junior year this consists of the work indicated in Stewart and Gee's Practical Physics, Vol. II. In the Senior year it includes among other things: the photometry of arc and incandescent lamps; the magnetic properties of the various irons; insulation and conductivity tests; efficiencies, characteristic curves, and magnetic leakage of dynamos, motors, and transformers; efficiency, capacity, etc., of accumulators; preparation of thesis.

The laboratory is well equipped with testing instruments, including the various types of ammeters, voltmeters, reflecting galvanometers, resistance boxes; standards of electromotive force, resistance, and capacity; Thomson's standard balances; electro-dynamometer, etc. The more delicate instruments are provided with substantial brick piers to prevent vibration.

The dynamo room is equipped with a Sturtevant engine of twenty-five horse-power and six dynamos, and is provided with counter-shafts, dynamometers, tachometer, etc. A sixty-thousand watt hour storage battery furnishes ample power for all work at any time when the dynamos are not running.

The electrical workshop possesses a fine outfit of machine tools, including planer, shaper, drill, universal milling machine, engine lathes, speed lathes, turret lathe, and grinder. Here is constructed by students much of the apparatus in daily use in the laboratory.

Graduates of this course may obtain the degree of Electrical Engineer after satisfying certain conditions. (See page 104.)

The plan of work for the Junior and Senior years is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Advanced Machine Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Two hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice in management of engines and boilers; adjusting parts; valve setting. MR. SANBORN.

**History.** — General History. A course of lectures aiming to set forth the working of the forces of civilization in the evolution of society and states. Theses by the students. *Tuesday, Thursday, and Saturday, at* 10.45 (*first half-year*). MR. START.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* PROFESSOR BROWN.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *Two hours a week.*

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and lectures. *Two hours a week.* MR. MYRICK.

Thompson's Dynamo Electric Machinery; Dynamo Plans and Calculations. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.* MR. MYRICK.

**English Literature.** — *Three hours a week.* PROFESSOR MAULSBY.

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* See remarks on Modern Languages, page 69.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.*
Professor Brown.

**Drawing.** — Machine Design. *Two hours a week.*
Professor Anthony.

**Applied Mechanics.** — Strength of Materials; Flexure; Torsion; Long Columns; Arches; Special Problems. *Three hours a week.*
Professor Bray.

**Electricity.** — Alternating Currents; Bedell and Crehore, Fleming. Recitations. *Four hours a week.* Professor Hooper.

**Electrical Laboratory.** — Management of Electrical Machinery; Testing dynamos, motors, transformers, and accumulators; testing lines, conductors, and lamps. Professor Hooper.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.*
Professor Bray.

**Political Economy.** — *Three hours a week.* President Capen.

**English Composition.** — *One hour a week.* Mr. Whittemore.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.*
Professor Brown.

**Drawing.** — Machine Design and Thesis Drawing. *Two hours a week.*
Professor Anthony.

**Electricity.** — Alternating Currents, Fleming; Theory of Electricity. *Three hours a week.* Professor Hooper.

**Electrical Laboratory.** — Special Investigations. Professor Hooper.

**Hydraulic Laboratory.** — Measuring discharge through orifices, pipes, and over weirs; Efficiency of Motors; Discharge in Rivers; Determination of Co-efficients. ——.

**Telegraph and Telephone.** — Lectures. *Two hours a week.*
Professor Dolbear.

**Preparation of Thesis.**

## MECHANICAL ENGINEERING.

It is the aim of this department to so instruct the student in the various subjects that he will be enabled to apply scientific principles to the design of a machine or to the proper arrangement of any mechanical plant. In the earlier part of his studies the work common to all engineering courses embraces the careful study of mathematics, physics, and chemistry, which have important bearing upon his subsequent study of the properties of materials used by the engineer. Elementary drawing also occupies a prominent place in the course and is followed by descriptive geometry. The latter is further developed in its application to practical problems and to the systematic study of mechanism.

Steam Enginery is taken by all engineers; it includes the study of the principles involved in the generation and application of power, the management of a steam engine and boiler, the making of steam joints, setting of valves, and so forth. The course in Thermodynamics is begun after the student has become well versed in the methods of the calculus, the principles being developed by mathematical treatment. It consists of the mechanical theory of heat, properties of gases, saturated and superheated steam, theory of the injector, and laws of the flow of steam. The subject is taught by text-book, lectures, and laboratory. Steam Engineering is taken by Seniors. It includes the study of the steam engine, compound and multiple expansion, and of steam boilers of various types; the dimensions for developing a required power; the material and sizes of parts requisite for strength and endurance; the effect and balance of reciprocating parts, and the various kinds of valve motions. Practice is given in engine and boiler testing and a design with working drawings is required of each student.

In this course students who so desire may make a special study of Marine Engineering, which includes the principles of the propelling instrument and powering of vessels. Students in Marine Engineering will spend their vacations in the engine room of a steam vessel.

Students in Mechanical Engineering pursue a very complete course of shop work in the new shops of the college; beginning with carpentry and wood turning, and followed by moulding, pattern making, blacksmithing, and machine work.

The plan for the last two years of the course in Mechanical Engineering is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Advanced Machine Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Two hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice in Management of Engines and Boilers; Adjusting Parts; Valve Setting. MR. SANBORN.

**History.** — As in Electrical Engineering Course. MR. START.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* PROFESSOR BROWN.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *Two hours a week.* ——.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and lectures. *Two hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Thermodynamics.** — Principles of Mechanical Theory of Heat. *Three hours a week.* MR. SANBORN.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.* MR. MYRICK.

**English Literature.** *Three hours a week.* PROFESSOR MAULSBY.

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* See remarks on Modern Languages, page 69.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week,*
PROFESSOR BROWN.

**Drawing.** — Machine Design. *Two hours a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure, Torsion; Long Columns; Arches; Special Problems. *Three hours a week.*
PROFESSOR BRAY.

**Steam Engineering.** — Mechanics of the Steam Engine; Dimensions and Proportions of Engines and Boilers; Study of different Types. *Five hours a week.* PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.*
PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Designs and Thesis Drawing. *Two hours a week.*
PROFESSOR ANTHONY.

**Mechanical Laboratory.** — Testing Engines and Boilers; Efficiency of Machines; Power required to Drive Machines; Calibrating Instruments. ——.

**Hydraulic Laboratory.** — Measuring Discharge through Orifices, Pipes, and over Weirs; Efficiency of Motors; Discharge in Rivers; Determination of Co-efficients. ——.

**Steam Engineering.** — Efficiency of Engines and Boilers; Design of Engine for Given Power; Dimension of Parts; Study of Valve Gears; Specifications. *Three hours a week.* PROFESSOR BRAY.

**Telegraph and Telephone.** — Lectures. *Two hours a week.*
PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## CIVIL ENGINEERING.

The course of study in this department, leading to the degree of Bachelor of Civil Engineering, has been arranged with reference to its disciplinary and educational value, as well as to the general and technical knowledge which it imparts, and has constantly in view the training of competent designers and constructors. Instruction is given by means of text-books and lectures, laboratory work, and practice in the drafting-room and in the field.

In Surveying, the use and adjustment of instruments are taught by work in the field, so that students become familiar with the methods of land, topographical, city, railroad, and mine surveying. The work in Plane Surveying is taken in the first term of the Sophomore year and is for all Engineers. It consists of recitations, field-work, and drawing-room practice in plotting from field notes, calculating, laying out, and dividing land. This is followed for students in this course by Topography, which embraces extended field practice with transit, stadia, level, and plane-table, and pen and colored topographical drawing, and modelling. A course of hydrographical, railroad, and city surveying follows Topography, and is designed to teach the student accuracy with rapidity in the instrumental work necessary for carrying out extended engineering enterprises. It embraces the preliminary survey, the location, and the staking out for construction.

The work in the drafting-room begins with plane geometrical problems, freehand drawing, and lettering; followed by mechanical drawing, problems in descriptive geometry, shades and shadows, plotting from field notes of actual surveys, topographical drawing, and map-making. The production of finished plans is required; also the drawing of details of engineering structures and machines necessary for the construction of railroads, sewer systems, steam and electric plants.

The work in Road Engineering includes study in the classroom of the principles governing the economical location of railroads and highways, as well as consideration of the cost of their construction, maintenance, and operation. The field-work embraces the survey and location of a line of railroad, and includes setting slope-stakes, locating turnouts, culverts, and bridges, with the preparation of specifications and estimates.

In Descriptive Geometry the instruction is given by means of text-books and lectures, illustrated by diagrams and models. The problems are worked out upon the blackboard, and many original questions are added, to make the student thoroughly familiar with this branch of mathematics.

Instruction in the Steam Engine is given by means of text-books, lectures, drawings, and practice with engines and boilers. Frequent reference is made to modern examples of engines and boilers of various kinds. Students have practice in applying the steam indicator for the determination of the power developed by the engine.

In Applied Mechanics the student is taught to design structures and machines, beginning with the study of forces, centre of gravity, moment of inertia, determination of stresses in frames and trusses, including investigation of the strength and elasticity of materials, theoretically in the class-room, and experimentally in the testing laboratory. A ready knowledge of mathematics is essential in this department, since frequent use is made of analytic geometry, trigonometry, and the calculus.

The subject of Construction is taught by recitations, lectures, laboratory work, and by the study of approved examples and reports of engineers and inspectors of work under construction. Investigation is made of the characteristic properties, strength, and durability of natural and artificial building materials. The appliances and machinery required in the construction of walls, dams, piers and abutments, arches and tunnels, are considered, and the student is made familiar with the methods of constructing foundations on land and under water, and the uses of piles of various kinds.

The work in Hydraulics embraces theoretical and experimental or applied hydraulics. Numerous problems are solved by the student, requiring the application of formulæ to cases of frequent occurrence in practice. A study of the laws governing the pressure and flow of water in pipes over weirs, through tubes, etc., is followed by numerous problems, requiring, on the part of the student, the application of formulæ to cases of frequent occurrence in practice. The student is taught the use of instruments in measuring the flow in rivers, and has laboratory practice with weirs, tanks, orifices, etc., and in measuring efficiency of hydraulic motors. A study is made of the published reports of engineers upon the experimental determination of the flow in conduits and sewers.

The instruction in Bridge Designing is based upon the analytic and graphic computation of stresses, as taken up in Applied Mechanics. The principles therein developed through the study of the strength and elasticity of materials are applied to computation for determining the several parts of highway and railroad bridges.

Students in Civil Engineering are required to take workshop practice in carpentry, wood turning, pattern making, moulding, and blacksmithing.

Graduates of this course may obtain the degree of Civil Engineer on complying with the requirements defined in the statement of the Graduate Department, page 104. The plan of the last two years of the course is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* PROFESSOR BROWN.

**Topography.** — Topographical Surveying; Pen and Colored Topographical Drawing. Field and office work. *Three hours a week.* MR. DANIELS.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Two hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice and Management of Engines and Boilers; Adjusting Parts; Valve Setting. MR. SANBORN.

**History.** — As in Electrical Engineering Course. MR. START.

**French or German.** *Three hours a week.*[*]

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[*] See remarks on Modern Languages, page 69.

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* PROFESSOR BROWN.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moment of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *Two hours a week.* ——.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Masonry Construction.** — Preparation and Use of Materials; Foundations; Dams; Walls; Abutments; Arches. *Three hours a week.* PROFESSOR BRAY.

**Surveying.** — City and Mining Surveying. Text-Book with field practice and office work. *Three hours a week.* MR. DANIELS.

**English Literature.** — *Three hours a week.* PROFESSOR MAULSBY.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.* PROFESSOR BROWN.

**Applied Mechanics.** — Strength of Materials; Flexure, Torsion; Long Columns, Arches; Special Problems. *Three hours a week.* PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.* PROFESSOR BRAY.

**Roads and Railroads.** — Laying-out, Construction, and Maintenance of Highways. Method of conducting Preliminary Survey and Trial Location for a Railroad. *Three hours a week.* PROFESSOR BRAY.

**Surveying.** — Practice in Railroad Surveying; Locating Curves, Switches, and Frogs; Laying out Mechanical Structures; Staking out for Construction. *Two hours a week.* MR. DANIELS.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

Mathematics. — Least Squares. *Two hours a week.* PROFESSOR BROWN.

Hydraulic Laboratory. — Measuring Discharges through Orifices, Pipes, and over Weirs; Efficiency of Motors; Discharge in Rivers; Determination of Co-efficients. ——.

Railroads. — Economic Theory of Railroad Location. *Two hours a week.* PROFESSOR BRAY.

Bridges and Roofs. — Theory and Practice of Designing. *Two hours a week.* MR. DANIELS.

Telegraph and Telephone. — Lectures. *Two hours a week.* PROFESSOR DOLBEAR.

Preparation of Thesis.

# TABULAR VIEW OF ENGINEERING COURSES.

## FRESHMAN YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per Week. | Must be preceded by |
|---|---|---|---|
| | FIRST TERM. | | |
| 1 | Mathematics | 6 | — |
| 2 | Mechanical Drawing | 3 | — |
| 3 | Freehand Drawing | 2 | — |
| 4 | Carpentry and Turning | 2 | — |
| 5 | French or German | 3 | — |
| 6 | Rhetoric | 3 | — |
| | SECOND TERM. | | |
| 7 | Mathematics | 3 | 1 |
| 8 | Mechanical Drawing | 3 | 2, 3 |
| 9 | Descriptive Geometry | 4 | 1, 2 |
| 10 | Moulding and Pattern Making | 1 | 4 |
| 11 | French or German | 3 | 5 |
| 12 | Rhetoric | 2 | 6 |
| 13 | Mechanics | 2 | 7* |

*May be taken at the same time, but cannot be taken before 7.

## SOPHOMORE YEAR.

| | | | |
|---|---|---|---|
| | FIRST TERM. | | |
| 14 | Analytical Geometry | 2 | 7 |
| 15 | Elements of Mechanism | 1 | 8, 9 |
| 16 | Machine Drawing | 2 | 9 |
| 17 | Pattern Making | 1 | 10 |
| 18 | French or German | 3 | 11 |
| 19 | Physics | 3 | 8 |
| 20 | Chemistry, General | 2 | — |
| 21 | Chemistry, Laboratory | 2 | — |
| 22 | Surveying | 2 | — |
| | SECOND TERM. | | |
| 23 | Calculus | 3 | 14 |
| 24 | Drawing | 2 | 15, 16 |
| 25 | Forging | 2 | — |
| 26 | French or German | 3 | 18 |
| 27 | Rhetoric | 3 | 12 |
| 28 | Physics, Lectures | 3 | 19 |
| 29 | Physics, Laboratory | 3 | 13, 19 |
| 30 | Metallurgy | | 20, 21 |

## JUNIOR YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 31 | Calculus | 3 | E. M. C. | 23 | — |
| 32 | Drawing, Machine | 2 | E. M. | 24 | — |
| 33 | Topography | 2 | C. | 22 | — |
| 34 | French or German | 3 | E. M. C. | 26 | — |
| 35 | Electricity, Recitations | 2 | E. M. C. | 7, 28, 29 | — |
| 36 | Electricity, Laboratory | 2 | E. M. C. | 7, 28, 29 | — |
| 37 | Steam Enginery | 3 | E. M. C. | 28 | — |
| 38 | History | 3 | E. M. C. | — | — |
| | SECOND TERM. | | | | |
| 39 | Calculus | – | E. M. C. | 31 | — |
| 40 | Vise, and Machine Work | – | E. M. | — | — |
| 41 | Applied Mechanics, Recitations | 3 | E. M. C. | 31 | 39, 42 |
| 42 | Applied Mechanics, Laboratory | 1 | E. M. C. | — | 41 |
| 43 | Electricity, Recitations | – | E. M. | 35, 36 | — |
| 44 | Dynamo Electric Machinery | 3 | E. | 14, 28 | — |
| 45 | Physical Laboratory | – | E. M. C. | 35, 36 | 43 |
| 46 | Thermo-Dynamics | 3 | M. | 31, 37 | 39 |
| 47 | English Literature | 3 | E. M. C. | — | — |
| 48 | Masonry Construction | – | C. | 39, 41 | 39, 41 |
| 49 | Surveying | 3 | C. | 33 | — |

*E. — Electrical. M. — Mechanical. C. — Civil.

## SENIOR YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 50 | Differential Equations | 2 | E. M. C. | 39 | — |
| 51 | Drawing — Design | 2 | E. M. C. | 32, 41 | — |
| 52 | Applied Mechanics | 3 | E. M. C. | 41, 42 | — |
| 53 | Electricity, Recitations | 4 | E. | 43, 45 | 50 |
| 54 | Electricity, Laboratory | – | E. | 43, 44, 45 | 53 |
| 55 | Steam Engineering | – | M. | 32, 37, 39, 46 | 52 |
| 56 | Political Economy | 3 | E. M. C. | — | — |
| 57 | Hydraulics | 3 | E. M. C. | — | 52 |
| 58 | Roads and Railroads | 3 | C. | 48 | 60 |
| 59 | English Composition | 1 | E. M. C. | 27 | — |
| 60 | Surveying | 2 | C. | 33 | 58 |
| | SECOND TERM. | | | | |
| 61 | Least Squares | 2 | E. M. C. | 31 | — |
| 62 | Drawing — Design | 2 | E. M. C. | 51 | — |
| 63 | Electricity | 3 | E. | 53 | — |
| 64 | Laboratory, Electrical | – | E. | 54 | 63 |
| 65 | Laboratory, Mechanical | – | M. | — | 68 |
| 66 | Laboratory, Hydraulic | – | E. M. C. | 57 | — |
| 67 | Telegraph and Telephone | 2 | E. M. C. | 28 | — |
| 68 | Steam Engineering | – | M. | 55 | — |
| 69 | Railroads | 2 | C. | 39, 52, 58 | — |
| 70 | Bridges and Roofs | 2 | C. | 52 | — |
| 71 | Thesis | – | E. M. C. | — | — |

*E. — Electrical. M. — Mechanical. C. — Civil.

# Buildings and Equipment.

## BUILDINGS.

The college buildings are: Ballou Hall, containing recitation rooms and the physical laboratory; Barnum Museum, containing the natural history collections and the biological and geological laboratories and lecture room; Goddard Chapel; Goddard Gymnasium; the Library; the Chemical Building, containing the chemical laboratories and lecture room; three dormitories, — East Hall, West Hall, and Dean Hall; and Metcalf Hall, for women students. A new building, containing the commons dining hall, the post-office and rooms for students, was completed soon after the beginning of the present college year. The Bromfield-Pearson school building is available for the technical courses of the College. Two buildings, Miner Hall and Paige Hall, are devoted to the use of the Divinity School.

## LIBRARY.

The Library contains thirty thousand eight hundred bound volumes, and about fifteen thousand pamphlets. It includes, in a separate room, the private library (numbering fourteen hundred and forty volumes) of the late Rev. William H. Ryder, D. D., of Chicago. The College regularly receives over two hundred periodicals. In the Library building a reading-room, maintained by the students, supplies the daily and weekly papers. Provision for the purchase of books is chiefly from the income of the Joy Library Fund, now amounting to twenty thousand dollars. The average annual increase by donation and purchase, for the last five years, has been about twelve hundred volumes. The Library is open to all members of the College every day in the week, except Sunday, from 8.30 A. M. to 12.45 P. M., and from 2 to 5 P. M. It is also open Monday and Thursday from 7 to 9.30 P. M.

In addition to the general library, there is in Miner Hall the collection of the Universalist Historical Society (thirty-five hundred volumes and several thousand pámphlets), to which, on application, students have free access; and in the Barnum Museum the department library of Natural History, numbering six hundred bound volumes and about one thousand pamphlets.

## BARNUM MUSEUM.

The Barnum Museum of Natural History was built in 1883–84 by the late P. T. Barnum, who also gave the college a fund for its maintenance, and later, by bequest, gave funds for the erection of two wings to the central building. One of these wings has just been erected. In addition to laboratory rooms, it affords space for the display of the mineralogical and geological collections.

The College is also indebted to Mr. Barnum for the larger portion of its zoölogical collection. This serves to illustrate all groups of the animal kingdom and is especially rich in skeletons and mounted skins of mammals. Besides the more common forms, it contains many rare and interesting species, as Hatteria, Polypterus, Ceratodus, Protopterus, Cestracion, Amphioxus, Peripatus, and Pentacrinus, the whole being well adapted for the purposes of instruction. During the present year a large series of skeletons of the lower vertebrates, as well as numbers of the Naples Station Invertebrates, will be placed on exhibition.

The botanical collection consists of an herbarium containing a representation of the flora of New England, besides many specimens from Europe and the Southern and Western States. The geological collection contains representatives of the various types of rocks, as well as of fossils from all formations. Especially interesting are the nearly perfect skeletons of Ichthyosaurus and Plesiosaurus. The mineralogical collection, which has been assembled with great care, contains most of the species in very fine examples. Among those at present displayed are collections illustrating the chemical and physical properties of minerals.

The laboratories and lecture rooms of the department of Geology are in the main Museum building. The geological laboratory is provided with petrological microscopes, instruments for making rock sections, and other instruments; the mineralogical laboratory possesses the apparatus necessary for the determination of minerals, the analysis of ores, and assay work; the biological laboratories are in the newly-erected wing. The laboratory for elementary work is equipped with all necessary facilities, while the laboratories (two in number) for advanced and research work have all the necessary appliances and reagents for investigation in the lines of Anatomy, Histology, and Embryology.

The department library of Natural History, recently established in the Barnum Museum, contains those publications which bear directly upon the work of the department. It already embraces over seven hundred volumes and twelve hundred pamphlets. Its future increase is in part provided for by the publications received in exchange for the "TUFTS COLLEGE STUDIES." Most of the series of periodicals are complete since 1870.

## GODDARD GYMNASIUM.

The Goddard Gymnasium is the gift of Mrs. Mary T. Goddard, and comprises, besides the main room, for individual and class exercise, dressing-rooms, tub-baths, shower-baths, and lockers. The floor space unoccupied by apparatus is sufficient to accommodate a class of sixty men. The apparatus embraces that usually found in a well-equipped gymnasium, and includes fourteen Sargent developing machines. A running-track, one thirty-second of a mile in length, extends around the room. A full set of anthropometric instruments admits the accurate measurement of each student as preliminary to the assignment of suitable exercise.

## PHYSICAL LABORATORY.

The Physical Laboratory contains apparatus sufficient for illustrating all the general principles of Physics. The equipment includes a dividing engine, chronograph, cathetometer, sextant, microscope, saccharimeter, polariscope, spectroscope, spectrometer, optical bench, Rowland's gratings, and charts of the solar spectrum; also apparatus for projection with sunlight, lime and electric lights. In the field of electricity the equipment is especially good, including standards of resistance, of capacity, and of electro-motive force, besides a variety of instruments for accurate measurement.

## ELECTRICAL LABORATORY.

The Electrical Laboratory is supplied with the apparatus needed for testing and experimental purposes; among which may be mentioned ammeters, voltmeters, Wheatstone bridges, reflecting galvanometers, an electronometer, Sir William Thomson's standard balances, condensers, a large induction coil, and, in process of construction, an electro-dynamometer with coils a metre in diameter.

The dynamo-room contains a B. F. Sturtevant high-speed automatic engine of about twenty-five horse-power, belted to a line of shafting, the driven pulley being connected to the shafting through an Emerson power-scale reading to forty horse-power. From this shafting are belted an American and a Ball arc-light dynamo, a small alternator, a special 4,000-watt machine for experimental purposes, and a pair of 110-volt 1,500-watt machines for the Library three-wire installation, and for charging the storage battery. Three other machines are in process of construction, — one of 12 kilo-watts and 110 volts. Steam power is furnished by two Whittier tubular boilers.

Belonging to the dynamo-room are over twenty arc-lamps and a supply of electrical testing instruments. Adjacent is the battery-room, the main battery consisting of sixty of the large cells of the American Accumulator Company. These cells are in constant use for experimental and motor work, and for lighting. Connected with the laboratories is a workshop containing several lathes, with an outfit of wood and metal working tools used in the construction and repair of apparatus. Most of the rough and some of the fine apparatus used in the dynamo-room and laboratories is manufactured in this room.

## CHEMICAL BUILDING.

The new building for the department of Chemistry contains laboratories for General Inorganic, Organic, Analytical and Metallurgical Chemistry, a large lecture room, library and weighing room, and the private laboratories of the Professor in charge. The rooms are provided with all the modern laboratory conveniences and are well equipped with apparatus and chemicals.

## BROMFIELD-PEARSON BUILDING.

The Bromfield-Pearson Building is provided with shops and drafting-rooms equipped for the instruction of classes in the Engineering courses in Carpentry, Pattern-making, Forging, Foundry and Machine Work, and Drawing. The complete equipment will be in readiness for the coming year and will include a forge shop and foundry, provided with the necessary forges and tools for a class of eighteen; pattern and machine shops, also equipped for classes of eighteen, each member being provided with a lathe, bench, and necessary tools. The drafting-rooms are in the third story and separated from the noise and vibration of the shops. Abundant and uniform light is provided by means of large skylights on the northerly side.

## METCALF HALL.

This building, for the accommodation of women students, is a gift to the College by Mr. Albert Metcalf, of Newton. It is built of buff brick and gray limestone, of simple and dignified architecture, and is equipped with every convenience. In the basement is a gymnasium, with bath-rooms connected. The first floor contains the rooms of the Matron, a reception-room, cloak-room, reading-room, and dining-room. The second and third floors have pleasant rooms for students, with ample bath and toilet conveniences on each floor. In the wing is the kitchen on the first floor, and servants' rooms on the second. Every safeguard for health and against fire is provided.

# General Information.

## RELIGIOUS OBSERVANCES.

Goddard Chapel, erected in 1882–83, is the gift of Mrs. Mary T. Goddard as a memorial of her husband, the late Thomas A. Goddard. Morning prayers are held daily, at which attendance is required. The care of the pulpit on Sundays devolves upon the President of the College; but variety and interest are given to the preaching services by frequent exchanges with neighboring clergymen. Attendance upon Sunday services is required; but permission is freely given to those who desire to attend elsewhere. A Sunday school is maintained in connection with Sunday worship, and students are made welcome to classes studying the Bible and subjects bearing upon the conduct of life.

The Russell Lecture, established in accordance with a bequest of the late James Russell, of Arlington, is delivered before the Trustees, Faculty, and students on the first Sunday of the college year, by either a clergyman or a layman, on a subject prescribed by the testator.

## TUFTS COLLEGE STUDIES.

This publication has been established as a means of presenting to the world the results of original work done in the different departments of the college. The numbers, which will be issued as material is ready, will be distributed to educational institutions and learned societies. The college desires to establish regular exchanges of these Studies with all publishing institutions at home and abroad. Correspondence regarding such exchanges should be addressed to the Librarian of Tufts College.

Three numbers have been issued, containing the following papers: "The Anterior Cranial Nerves of Pipa," by G. A. Arnold; "Ectodermic Origin of the Cartilages of the Head," by Julia B. Platt; "The Classification of the Arthropoda," by J. S. Kingsley; "Development of the Lungs of Spiders," by O. L. Simmons; "Development of the Wing in Sterna Wilsoni," by V. L. Leighton.

The editorial board of Tufts College Studies, for the year 1895, is made up of the President of the College, and Professors Graves, Knight, Dolbear, and Kingsley.

## ADMISSION AND REGISTRATION.

The first examinations for admission to the College of Letters are held on the three days immediately following the annual Commencement in June, and the second examinations on three successive days in September, the last being the opening day of the college year. The program of the examinations may be found in the College Calendar on pages 4 and 5. Entering students are required to register at the office of the Registrar before taking their examinations. Those entering on certificates must file the proper blanks (to be obtained of the Registrar of the College) at least one month before the opening of the college year. This is necessary for a thorough examination by the Faculty of the statements submitted, and any one who does not comply with the full requirements relating to certificates may be required to take the examinations as a condition of admission to the College.

Every student who has been a resident one year or more at the College is required to register at the office of the Registrar before noon of the opening day of the college year, and must then file, on blanks furnished for the purpose, two statements of his plan of study for the coming half-year, one to be kept on file by the Registrar, the other for the use of his major instructor. The following day will be devoted to whatever consultations with students instructors may appoint. No petitions concerning the courses of students in regular standing, except such as may be made in appeal from the decisions of major instructors, will be brought up for action by the Faculty; but all petitions relating to special courses and all appeals from decisions of major instructors must be before the Faculty on the evening of this day.

Instructors will post their class lists before 8.45 o'clock on the morning of the third day, and all students will be expected to meet their program appointments on and after that day. No student will be recognized as a member of a class whose name does not appear in the instructor's list of that class.

The same regulations are in force at mid-year and apply to all students, the arrangements for the first three days of the second half-year being the same as those for the first three days of the first half-year.

Students entering Tufts College after pursuing study in any other college of equal rank are credited with the number of hours' work actually done towards the requirements of Tufts College, as certified by the proper authorities of the college from which the student comes. Such students must present satisfactory certificates showing the amount and character of work already accomplished, in order to obtain credit on the course of this College.

## SPECIAL STUDENTS.

Students wishing to pursue a special course of study, who are not candidates for a degree, are subject to the following regulations: —

1. Every special student shall choose a major department, and shall make up his plan of study under the direction and subject to the approval of the major instructor.

2. The student shall satisfy the instructor in each subject included in the approved plan of study that he is able to pursue the work.

3. Every special student having less than fifteen program hours a week will be required to obtain seventy per cent in each subject; but those whose program hours number fifteen or more will be treated in the same manner as regular students.

4. A special student, on leaving College, shall be entitled to a certificate giving the per cent attained in each course pursued, and signed by the President and Registrar.

5. Special students in Electrical Engineering are required to pass examinations in General Physics, Trigonometry, and Elementary Calculus.

## TERMS AND VACATIONS.

The college year begins on the third Thursday in September, and ends at Commencement, the third Wednesday in June. The year is divided into two terms of eighteen weeks each. There are no college exercises during a recess of three days at Thanksgiving, two weeks at Christmas, and one week beginning on the Saturday before the first Thursday in April.

## EXPENSES.

The charge for instruction is *one hundred dollars* a year.

Students in the laboratories are charged for certain materials used and for breakage. A fee of *two dollars* a term, payable in advance, is required of all students taking laboratory work in Biology. The charge to engineering students is *twenty dollars* a year extra, and other students who take shop work are charged extra.

A charge of *ten dollars* a year for the care of rooms is made to all persons rooming in any of the college buildings, except Paige Hall. Any damage done by students to college property is charged in the term bills.

Beginning with the college year, 1894–95, every student who enters the College of Letters will be required to deposit with the Treasurer of the College either a bond with two satisfactory sureties for the sum of *one hundred and fifty dollars*, or the sum of *seventy-five dollars* in cash, which sum, with interest at the rate of four per cent yearly, will be returned when the student leaves the College, his term bills first being paid in full.

The charges for each year are contained in two bills, of which the first is made at the middle of the year, and is payable on the first day of March; the second is made immediately after Commencement, and is payable on the first day of the following college year; but the second bill of the Senior year must be settled by the Saturday before Commencement.

Students board in commons at $3.75 per week; in private families at $3.50 to $5.00 for table board. Other expenses vary with the economy of each student. Students furnish their own rooms.

The following estimates represent the fixed annual expenses: —

| | | |
|---|---|---|
| Tuition . . . . . . . . . . . . . | $100.00 | $100.00 |
| Physical culture, including gymnasium and grounds . . . . . . . . . . | 10.00 | 10.00 |
| Half room-rent . . . . . . . . . . | 15.00 | 75.00 |
| Care of rooms . . . . . . . . . . | 10.00 | 10.00 |
| Board, $3.50 to $5.00 a week (36 weeks), | 126.00 | 180.00 |
| Total . . . . . . . . . . . | $261.00 | $375.00 |

## SCHOLARSHIPS.

Awards of scholarships are made by the Board of Trustees on the recommendation of the Faculty. The obtaining of a scholarship for one year does not constitute any title to a second nomination.

Applications for scholarships and other aids must be made to the Faculty on or before the first day of November; and if the applicant be a minor, must be sanctioned by his parent or guardian. Scholarships will be granted, in general, only to students actually in need of such aid. No one need apply who has not made satisfactory progress, or who has come under any grave censure in the course of the year.

Besides the scholarships already established for students, a limited number of gratuities of fifty dollars each are offered, the number not to exceed the number of scholarships available in any given year.

Scholarships and gratuities are available for those students only whose term bills are fully paid within ten days after the opening of each college term or after such bills shall have become due. The bills of any student whose connection with the College ceases are due at that time. The term bills of members of the graduating class are payable on the Saturday preceding Commencement Day.

No scholarship or gratuity is available to any student who is not a resident of a college dormitory, unless excused in writing from such residence by the authority of the executive committee of the Board of Trustees.

The following scholarships, of one hundred dollars each, are awarded annually: —

THREE STATE SCHOLARSHIPS, — Established in accordance with a resolve of the Commonwealth.

FIVE HOWLAND SCHOLARSHIPS, — Established from the income of the bequest of the late Edwin Howland, of South Africa.

FIVE WALKER MATHEMATICAL SCHOLARSHIPS, — Established in honor of the late William J. Walker, M. D., of Newport, R. I., and payable from the income of the Walker Fund.

TWO MOSES DAY SCHOLARSHIPS, — Founded by the late Moses Day, of Roxbury.

THE A. A. MINER SCHOLARSHIP, — Founded by A. A. Miner, D. D., of Boston.

THE REBECCA T. ROBINSON SCHOLARSHIP, — Founded by the late Charles Robinson, LL. D., of Newton.

THE PATTERSON SCHOLARSHIP, — Founded by A. J. Patterson, D.D., of Roxbury, in the name of A. J. and Jane L. Patterson. [The income of this scholarship is not at present available.]

THE WILLIAM OSCAR CORNELL SCHOLARSHIP, — Founded by William Oscar Cornell, of Providence, R. I.

THE ARA CUSHMAN SCHOLARSHIP, — Founded by Ara Cushman, of Auburn, Me.

THE LAURA A. SCOTT SCHOLARSHIP, — Founded by Mrs. Laura A Scott, of Ridgefield, Conn.

THE STOW SCHOLARSHIP, — Founded by Mrs. Eugenia D. Stow, of Meriden, Conn.

THE NORCROSS SCHOLARSHIP, — Founded by James A. and Mrs. Mary E. Norcross, of Worcester.

THE ANDERSON SCHOLARSHIP, — Founded by John M. Anderson, of Salem, in the name of John M. and Rebecca Anderson.

THE TRAVELLI SCHOLARSHIP, — Founded by Mrs. Emily R. Travelli, of Newton.

THE WHITTIER SCHOLARSHIP, — Founded by Charles Whittier, of Roxbury, in the name of Charles and Eliza Isabel Whittier.

THE TALBOT SCHOLARSHIP, — Founded by Newton Talbot, of Boston.

THE SIMONS MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary A. Simons, of Manchester, N. H., in memory of Hiram, H. Augustus, and Frank Simons.

THE AMASA AND HANNAH L. WHITING SCHOLARSHIP, — Founded by Mrs. Hannah L. Whiting, of Hingham.

THE MARTHA GOLDTHWAITE MEMORIAL SCHOLARSHIP, — Founded by Willard Goldthwaite, of Salem.

THE ANDREW J. CLARK MEMORIAL SCHOLARSHIP, — Founded by Mrs. Abbie B. Clark, of Orange.

THE SARAH E. SAYLES MEMORIAL SCHOLARSHIP, — Founded by Albert W. Sayles, of Lowell.

THE COUSENS SCHOLARSHIP, — Founded by John E. Cousens, of Brookline, in the name of John E. and Sarah C. Cousens.

THE BENJAMIN F. SPINNEY SCHOLARSHIP, — Founded by Benjamin F. Spinney, of Lynn.

THE HENRY F. BARROWS SCHOLARSHIP, — Founded by Henry F. Barrows, of North Attleboro.

THE ELLERY E. PECK MEMORIAL SCHOLARSHIP, — Founded by Henry Rollins, of Bangor, Me. [The income of this scholarship is not at present available.]

THE J. H. MORLEY MEMORIAL SCHOLARSHIP, — Founded by Herbert Morley Small, of Baldwinville.

THE EDWIN H. CHAPIN MEMORIAL SCHOLARSHIP, — Founded by friends of the late E. H. Chapin, D. D., in New York City.

THE THOMAS A. GODDARD MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary T. Goddard, of Newton.

THE HOSEA BALLOU, 2D, MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary T. Goddard, of Newton.

THE HENRY E. COBB SCHOLARSHIP, — Founded by the late Henry E. Cobb, of Boston.

THE MARY ANN WARD SCHOLARSHIP, — Founded by Sylvester L. Ward, of Boston.

THE MARIA P. WINN SCHOLARSHIP, — Established from a bequest of the late Mrs. Maria P. Winn, of Woburn.

THE J. D. PEIRCE SCHOLARSHIP, — Founded by the children and other relatives of the late J. D. Peirce, D. D., of Attleboro.

THE SCHOLARSHIP OF THE CLASS OF 1857, — Founded by Heman Allen Dearborn, for the benefit of women students.

Two scholarships of one hundred dollars each and one of fifty dollars, for women students, founded by Mrs. Lucy H. Stowe, of Lawrence, Mass.

The following scholarships of fifty dollars each are awarded annually: —

THE A. A. MINER SCHOLARSHIP, — Founded by A. A. Miner, D. D., of Boston.

THE PERKINS SCHOLARSHIP, — Founded by James D. Perkins, of Brooklyn, N. Y.

THE MOSES DAY SCHOLARSHIP, — Founded by the late Moses Day, of Roxbury.

THE GREENWOOD PRIZE SCHOLARSHIP IN ORATORY, — Founded by the late Mrs. Eliza M. Greenwood, of Malden, and given to such student as shall have made, as the result of faithful work, together with a fair degree of attainment, the greatest improvement in Oratory.

APPOINTMENTS. — The pay of a monitor is *fifteen dollars* a year; that of the bell-ringer and the organist, *one hundred and fifty dollars* each.

## PRIZES.

GODDARD PRIZES. — In the second term of the academical year three prizes of *fifteen dollars* each are assigned from the Goddard Prize Fund, as follows: —

A prize for the best examination in Plato's Symposium, or the Agamemnon of Æschylus, including an account of the anthor and his works.

A prize for the best Latin prose translation, by a member of the class pursuing Latin 2, of the seventeenth and eighteenth sections of Chapter xxxiv. in Liddell's History of Rome.

A prize for the best examination in the Mathematics of the first year.

The translations must be left at the President's office by the first day of May, in sealed envelopes, accompanied by sealed letters containing the authors' names.

RHETORICAL PRIZES. — Six prizes are awarded, as follows: —

Two prizes, of *twenty* and *ten dollars* respectively, to the best readers among students who have taken six term hours in Oratory.

Two prizes, of *twenty* and *ten dollars* respectively, to students who have taken four term hours in Oratory, for the best exhibition of improvement and skill in elocution.

Two prizes, of *twenty* and *ten dollars* respectively, on the same conditions, to students who have taken two term hours in Oratory.

The rhetorical prizes are awarded by a committee, chosen by the Faculty, who judge the work presented by the competitors upon the public day appointed for that purpose. In order to enter the public competition, candidates, as well as their selections, must be approved by the Professor of Oratory.

ENTRANCE EXAMINATION PRIZES. — Two prizes, of *thirty* and *twenty dollars* respectively, are awarded for the best entrance examinations. No one will be considered a candidate for such prize unless he has passed at the regular examinations in all the subjects required for admission to the College, and has been admitted without conditions. These prizes are payable at the end of the first term in College.

The foregoing prizes are not awarded unless, in the opinion of the respective judges, there is sufficient merit in the several contests to warrant their distribution.

## HONORS AND DEGREES.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class in the Courses in Liberal Arts who shall have attained grade A (at least eighty-seven per cent) in his major department, and Grade B (at least seventy-five per cent) in the collateral subjects.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class in the Engineering Courses who shall have complied with the following conditions: —

In two years preceding graduation, —

1. He must have attained Grade A (over eighty-seven per cent) in the equivalent of six hours a week for a year in the subject in which he desires honors.
2. He must also have attained Grade A in extra work in this or a cognate subject equivalent to three hours a week for a year.
3. He must have attained Grade B (over seventy-five per cent) in the average of all his studies during this period.

The following subject in the Engineering Courses is open for Honors, — Electricity.

HONORABLE MENTION will be made in the Commencement program and in the Annual Catalogue of a student who has attained Grade A or B in a department to which, during the two years preceding, he has given the equivalent of not less than six hours a week for a year.

THE DEGREE OF BACHELOR OF ARTS will be conferred at Commencement by the Trustees, on recommendation of the Faculty, upon students who shall have complied in a satisfactory manner with the conditions stated on pages 29 and 37.

THE DEGREE OF BACHELOR OF PHILOSOPHY will be conferred upon students who shall have complied with the conditions stated on pages 29 and 37 for the attainment of that degree.

THE DEGREE OF BACHELOR OF CIVIL ENGINEERING, or of BACHELOR OF ELECTRICAL ENGINEERING, or of BACHELOR OF MECHANICAL ENGINEERING, will be conferred upon students who shall have completed the required course, under the same conditions.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain the degree of Bachelor of Civil Engineering or of Electrical Engineering or of Mechanical Engineering, after a graduate course of one year in the Engineering department.

For the advanced degrees of MASTER OF ARTS, DOCTOR OF PHILOSOPHY, CIVIL ENGINEER, ELECTRICAL ENGINEER, and MECHANICAL ENGINEER, see Graduate Department, page 104.

# The Graduate Department.

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## EXECUTIVE BOARD OF THE GRADUATE DEPARTMENT.

ELMER H. CAPEN, D. D., *President.*
HEMAN A. DEARBORN, A. M.
WILLIAM G. TOUSEY, A. M., B. D.
AMOS E. DOLBEAR, M. E., PH. D.
GEORGE T. KNIGHT, A. M., D. D., *Secretary.*
J. STERLING KINGSLEY, S. D.
FRANK P. GRAVES, A. M., PH. D.

## FELLOWS.

KENYON, FREDERICK COURTLAND, *Lincoln, Neb.*, *Dean Hall*, 1.
S. B. (Nebraska University), 1892. Instructor in Geology, Nebraska University, 1891–92.
*Biology. Olmstead Fellow in Natural History.*

LAMBERT, FRED. DAYTON, *Muscatine, Iowa*, *East Hall*, 8.
PH. B. 1894. *Biology. Miner Fellow in Natural History.*

## STUDENTS.

BROWN, HENRIETTA NOBLE . . *Tufts College* . 38 Professors Row.
A. B. 1893. (*Assistant in Chemistry.*) *Biology and Chemistry.*

MORRISON, ADELBERT HARLAND, *Lawrence.* . . . . . . Λ Υ House.
B. E. E. 1894. *Electricity.*

PROUTY, WILLIS JAMES . . . *Meriden, Conn.*,
A. B., 1887. *Latin.*

WEBSTER, FRED HENRY . . . *Haverhill.* . . . . . East Hall, 29.
A. B., 1894. (*Assistant in Chemistry.*) *Chemistry.*

## INSTRUCTION.

Graduate instruction is given by the General Faculty. The advanced elective work offered to undergraduates in any department of the College of Letters is open to graduate students, and will count for the degree of Master of Arts, on condition that it be not counted for any other degree. Additional courses still more advanced may be arranged in many cases with the instructor in whose department the work is to be done.

The degrees offered are Master of Arts, Electrical Engineer, Mechanical Engineer, Civil Engineer, and Doctor of Philosophy. Departments at present open to candidates for the degree of Master of Arts are: —

ENGLISH LITERATURE.
MODERN LANGUAGES.
LATIN.
GREEK.
HISTORY.
MATHEMATICS.
CHEMISTRY.
BIOLOGY.
ELECTRICITY.

The degree of Doctor of Philosophy is offered in CLASSICAL PHILOLOGY, CHEMISTRY, and BIOLOGY.

The conditions upon which the several degrees may be obtained and the requirements of the departments are stated below.

## DEGREES.

THE DEGREE OF MASTER OF ARTS will be conferred upon graduates of Tufts College who have received the degree of Bachelor of Arts or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of Bachelor of Arts, upon the following conditions: —

1. They shall have completed an approved course of advanced study, including the equivalent of at least thirty term hours, in one, or, at the most, two departments.
2. This course shall be pursued during a residence of not less than one year. The condition of residence may be waived by special permission, but in this case the degree cannot be taken with less than two years of graduate study.
3. The candidate shall prepare a thesis and pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.
4. No subject counted for the first degree will be counted for the second degree.
5. Candidates for this degree must make a written application to the Executive Board of the Graduate Department before October 1 of the college year in which the degree is to be conferred, and if the degree is not taken after one year's study they must also give a second notice three months before receiving the degree.

Graduates of Tufts College who have taken the degree of Bachelor of Philosophy, or graduates of other colleges holding a degree of similar grade, must complete the requirements for the degree of Bachelor of Arts before they can be entered as students in courses leading to the degree of Master of Arts.

THE DEGREE OF CIVIL ENGINEER, ELECTRICAL ENGINEER, or MECHANICAL ENGINEER will be conferred upon Bachelors of Civil, Electrical, or Mechanical Engineering, respectively, who shall satisfactorily pursue advanced professional study at the College for one year, under the conditions required of candidates for the degree of Master of Arts; or who shall present suitable evidence of three years of professional work, of which one must be in a position of responsibility, in which case a certain amount of professional study will be assumed, upon which a thesis shall be presented.

THE DEGREE OF DOCTOR OF PHILOSOPHY will be conferred upon Bachelors of Arts, Philosophy, or Science, who shall have pursued at least three years of graduate study, two years of which must be in residence. This degree will not be conferred simply on the ground of the completion of the required course of study. High attainment is necessary, and especially the power of original thought and independent investigation. The whole course of study must be devoted to one subject, and a thesis must be presented giving evidence of original research. Other special requirements may be made by the instructors in charge of the work of the candidates. Each candidate must pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.

The candidate for this degree must make a written application to the Secretary of the Executive Board of the Graduate Department at least two years before the degree is to be conferred, and his thesis must be handed to the Secretary of the above board at least two months before Commencement.

The Degree of Master of Arts may be taken by candidates for the degree of Doctor of Philosophy at the end of their first year's study, or will be conferred together with the latter degree.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF MASTER OF ARTS.*

**English Literature.** — Candidates for the degree of Master of Arts must have taken subjects 1 to 5 with either 6, 8, 9, or one topic of 7. Subject 6, if not previously taken, may be pursued as a graduate subject, but the advanced student will be expected to make an exhaustive study of one or more selected authors. Subject 7 may be counted as graduate work, in such topics as have not previously been taken, provided that the student shall do work surpassing in quantity and quality that required of undergraduate students. In addition to catalogue subjects, the graduate student will be expected to present, in the required thesis, the results obtained in some special line of investigation in literary history or criticism.

**Modern Languages.** — The extended undergraduate courses offered in Modern Languages enable the candidate for the degree of Bachelor of Arts who specializes in this department to cover the work formerly required for the Master's degree. For those who have not taken the more advanced subjects, the department offers a full graduate course leading to the degree of Master of Arts. The work is performed in existing undergraduate classes. (See pages 44 to 47.) To enter upon this course, the candidate must have completed the equivalent of six of the Modern Language subjects, including 1 and 2 in both German and French. Of elementary subjects only Italian may be taken by such as have had the equivalent of two years of French. Graduate students whose special work is being performed in other departments are admitted to such classes in German and French, beyond subject 1, as their proficiency will allow.

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* Subject numbers referred to in these statements are those used under Departments of Instruction, pages 40 to 68.

**Latin.** — Candidates for the degree of Master of Arts in Latin must have passed Latin 1, 2, and 3. Subjects 4, 6, 7, and 8 may be taken by graduate students, and additional advanced work will be laid out by the instructor. In Latin 4 graduate students will be expected to do work surpassing in quantity and quality that done by undergraduate students. Latin 6, 7, and 8 are primarily graduate subjects. The required thesis must embody the result of special investigation of some author or period, or of some philological problem.

**Greek.** — Candidates for the degree of Master of Arts in Greek must have completed Greek 1, 2, 3, or 4, and 5 or 6, or equivalents for these subjects. Latin may be taken as minor work with Greek. Graduate students will be expected to do work of advanced character, whether in classes with undergraduates, or on special lines of investigation assigned by the instructor. The required thesis, on some approved topic, relating to some author, period, or philological problem, must give evidence of this advanced attainment.

**History.** — Every graduate student must have taken History 1, 2, and 4, or their equivalents. Candidates for the degree of Master of Arts must be able to read French works, and a working knowledge of German is desirable, and may in some cases be necessary. Of the subjects announced in the program of this department on page 54, 10 is for graduates only, while 5 and 9 will be accepted as parts of work leading to the degree of Master of Arts. In addition to these subjects work will be laid out for graduate students in such special lines as individuals may desire to pursue. Certain collateral subjects may be called for in such cases. Graduate students will be expected to do something in the way of independent investigation of a definite subject, the results to be embodied in the thesis required to obtain the degree.

**Mathematics.** — Graduate students in Mathematics must have passed creditably the prescribed undergraduate work in this department — Mathematics 1 — and may do graduate work from that point or from such more advanced point as they may have attained. Graduate students in Mathematics 2, 3, 4, 5, 6, and 7 will be required to do more advanced work in these subjects, to receive the degree of Master of Arts in Mathematics, than is required of undergraduate students.

**Chemistry.** — Candidates for the degree of Master of Arts must have completed subjects 1, 2, 3, and 6, or their equivalents. The advanced subjects 4, 5, 7, 8, and 9 are offered, and satisfactory work must be done in at least three of these subjects. The candidate must present an acceptable thesis in one of the subjects, and pass satisfactory examinations in all of the subjects studied.

**Biology.** — Candidates for the degree of Master of Arts in Biology must have already done work equivalent to Biology 1; or lacking that, they must take that course in addition to their graduate work. The work will be done in the lines of comparative anatomy, histology, or embryology, and will include a thesis embodying original research.

**Electricity.** — The candidate for the Master's degree in Electricity must have done substantially the work in that department required of the Bachelor of Electrical Engineering. This involves the election during his undergraduate course of studies in this department, if it is expected that the degree will be obtained within one year of graduate study.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

**Classical Philology.** — Candidates for the degree of Doctor of Philosophy must be able to read Greek and Latin readily at sight, and to use French and German authorities when necessary. They must have completed three years of advanced work, two of them, at least, in residence. The work will include Latin 6, 7, and 8, and Greek 8, 9, and 10. Regular work antecedent to these subjects or its equivalent must have been previously accomplished. Candidates must, in the end, pass an examination on the work of the three years, and present a satisfactory thesis on some subject of original research in Classical Philology.

**Chemistry.** — Candidates must be able to translate scientific German readily and accurately before beginning their work, and must have already taken subjects 1, 2, 3, and 6, or equivalent work. Unless previously qualified, they must take subjects 4, 7, 8, and 9 and devote at least one year to subject 10. Examinations in the above subjects must be satisfactorily passed and a thesis embodying an original investigation in Chemistry must be presented.

A well equipped laboratory is open to graduate students who may wish to pursue special lines of research work, and the department is prepared to offer every encouragement of original investigations.

**Biology.** — Candidates must have a good working knowledge of French and German before beginning their work, they must carry on research in Animal Morphology for at least three years, two of which must be in residence, and they must have passed one summer at some seashore biological station. They must pass an examination on general zoölogy, embracing not only the fundamental facts of morphology and classification, but the more prominent philosophical views as well. Each candidate must present an acceptable thesis embodying original research, with an adequate discussion of the bearings of the facts discovered, and the views of previous writers on the same subject.

## FELLOWSHIPS.

The Olmstead and Miner Fellowships in Natural History. — In accordance with the spirit of the gift of the late Charles Hyde Olmstead, of Hartford, Conn., the Trustees have established two fellowships in Natural History, to be known respectively as the Olmstead and the Miner Fellowships. The income of these fellowships, amounting to two hundred and fifty dollars annually each, is awarded by the Trustees to graduate students in Natural History subjects upon recommendation of the graduate Faculty. The conditions of the fellowships are as follows: —

(1) The application must be made in writing before May 1, addressed to the President of the College. It must contain evidence of a liberal education, of an ability to profit by the work to be done, and testimonials of good character from instructors or others. Any original article, either written or printed, is an aid in ascertaining the attainments of the candidate.

(2) The holder of the fellowship will be expected to devote himself to the prosecution of some special subject under the direction of the professors in charge of the departments of Natural History. He may be called upon for minor services, such as conducting examinations, but he shall not be called upon to teach. He may, however, at his own option, and with the approval of the President, give instruction by lectures or otherwise to persons connected with the College, but not elsewhere.

(3) The payments will be made, half in January, and half in June; but, in case of resignation or removal from the fellowship, payment will be made only for the time it is actually held. The holder of the fellowship is not exempt from the payment of tuition.

(4) Residence is a condition of holding either of these fellowships.

The holder of a fellowship may be eligible to a single re-election, but incumbency constitutes no claim to reappointment.

## TUITION.

The tuition fee for the whole course for the degrees of Master of Arts, Civil Engineer, and Electrical Engineer is *one hundred dollars*, of which *fifty dollars* is payable in advance.

The tuition fee for candidates for the degree of Doctor of Philosophy is *one hundred dollars* for each year spent at the College, of which *fifty dollars* is payable in advance each year.

The requirement of bonds stated on page 95 applies to all students of the College, graduate as well as undergraduate.

# Calendar of the Divinity School.

## 1894.

| | | |
|---|---|---|
| SEPT. | 19. | Examination for Admission, in Miner Theological Hall, beginning at 9 A. M. |
| SEPT. | 20. | School Year begins, Thursday morning. |
| SEPT. | 23. | Russell Lecture. |
| DEC. | 19. | Christmas Recess begins, Wednesday evening. |

## 1895.

| | | |
|---|---|---|
| JAN. | 2. | Christmas Recess ends, Wednesday evening. |
| MARCH | 30. | Spring Recess begins, Saturday evening. |
| APRIL | 7. | Spring Recess ends, Sunday evening. |
| JUNE | 4. | Prize Reading. Greenwood Prizes. |
| JUNE | 14. | Class Day. |
| JUNE | 16. | Baccalaureate Sermon. |
| JUNE | 19. | Commencement. |

### SUMMER VACATION, THIRTEEN WEEKS.

| | | |
|---|---|---|
| SEPT. | 18. | Examination for Admission, in Miner Theological Hall, beginning at 9 A. M. |
| SEPT. | 19. | School Year begins, Thursday morning. |
| SEPT. | 22. | Russell Lecture. |
| DEC. | 18. | Christmas Recess begins, Wednesday evening. |

## 1896.

| | | |
|---|---|---|
| JAN. | 1. | Christmas Recess ends, Wednesday evening. |

# Faculty of the Divinity School.

ELMER H. CAPEN, D. D., *President.*
*In charge of Political Economy.*

CHARLES H. LEONARD, D. D., *Dean.*
*Goddard Professor of Homiletics and Pastoral Theology.*

THOMAS J. SAWYER, D. D.
*Packard Professor of Christian Theology, Emeritus.*

WILLIAM G. TOUSEY, A. M., B. D.
*Professor of Ethics and Philosophy of Theism.*

GEORGE T. KNIGHT, D. D., *Secretary.*
*Professor of Church History, also in charge of Systematic Theology.*

GEORGE M. HARMON, A. M., B. D.
*Professor of Biblical Theology.*

DAVID L. MAULSBY, A. M.
*Professor of Oratory.*

WARREN S. WOODBRIDGE, A. B., B. D.
*Woodbridge Professor of Applied Christianity.*

ANSON B. CURTIS, PH. D.
*Professor of Hebrew.*

## NON-RESIDENT LECTURERS.

JOHN COLEMAN ADAMS, D. D.
*Lecturer on Some Conditions of Effective Preaching.*

F. W. HAMILTON, A. M.
*Lecturer on Christian Economics.*

JOSEPH K. MASON, D. D.
*Lecturer on Preachers and Preaching.*

# Students.

## Senior Class.

| | | |
|---|---|---|
| Blair, Arthur Adolphus | *Manchester, N. H.*, | Paige Hall, 13. |
| Cardall, Alfred James | *Bay City, Mich.* | Paige Hall, 24. |
| Cobb, Joseph Fernald, A. B., | *Deering, Me.* | Paige Hall, 7. |
| Roscoe, Tom, M. D.<br>(Vt. Med. Coll.) | *Somerville* | 178 Central St. |
| Smith, Ashley Auburn | *Auburn, Me.* | Paige Hall, 1. |
| Tillinghast, James Dannals, | *Buffalo, N. Y.* | Heth Aleph Res House. |
| Wells, Charles Henry | *Barre, Vt.* | Paige Hall, 31. |

## Middle Class.

| | | |
|---|---|---|
| Blackford, Frank, B. S.,<br>(Nat. Norm. Univ.) | *El Dorado, O.* | Paige Hall, 18. |
| Dickerson, Jesse Clifford | *Detroit, Mich.* | Paige Hall, 6. |
| Eddy, Frank Fay | *Charlotte, Mich.* | Paige Hall, 30. |
| Ferguson, Frank Alvah,<br>A. B., (Bost. Univ.) | *Somerville* | 316 Beacon St. |
| Fischer, Theodore Adolph | *Meriden, Conn.* | Paige Hall, 19. |
| Taylor, Henry Butterfield | *Buffalo, N. Y.* | Absent. |
| Ward, Charles Merrill | *Brattleboro, Vt.* | Heth Aleph Res House. |
| Wilson, John Harner | *Philadelphia, Pa.* | Paige Hall, 5. |

## Junior Class.

| | | |
|---|---|---|
| Bartlett, Alden Eugene | *Newtonville* | Paige Hall, 15. |
| Benton, Herbert Elmon, A.B., | *Annisquam* | Paige Hall, 12. |
| Bissell, Flint Mandrin | *Wellesley* | Paige Hall, 23. |
| Earle, Augusta Gertrude | *Somerville* | 8 Franklin St. |
| Eills, John | *Lowell* | Paige Hall, 17. |
| Fortier, George Ferdinand | *Somerville* | Paige Hall, 2. |
| Jones, Clifford Ernest | *Cleveland, O.* | Paige Hall, 10. |
| Leavitt, Fenwick Lasselle | *Auburn, Me.* | Paige Hall, 25. |
| Macduff, Isabella Stirling | *Claremont, N. H.*, | 2 Emery St. |
| Powers, Mariette | *Newry, Me.* | Metcalf Hall, 9. |
| Robbins, Clarence Guy | *Melrose* | Paige Hall, 9. |
| Small, Willard Stanton, A. B., | *Provincetown* | Paige Hall, 36. |
| Smith, Nancy Wiley Paine | *Tufts College* | Morton Ave. |
| Thompson, George Linnæus, | *Stafford, Conn.* | Paige Hall, 29. |
| Walker, Fred Storer, A. B. | *Portland, Me.* | Paige Hall, 8. |

## Sub-Junior Class.

| | | |
|---|---|---|
| Amies, Olive Josephine | *Philadelphia, Pa.*, | Metcalf Hall, 16. |
| Ball, Dwight Ambrose | *Bellows Falls, Vt.*, | Paige Hall, 22. |
| Barney, Edward Mitchell | *Lynn* | Paige Hall, 20. |
| Bennett, George Arthur | *Westbrook, Me.* | Paige Hall, 28. |
| Boivin, Bertram D. | *Hinsdale, N. H.* | Paige Hall, 3. |
| Milton, Lucy Almira | *Waverley* | Mr. DeCelles's. |
| Rouillard, Harry Enoch | *Hinsdale, N. H.* | Paige Hall, 27. |

## Special Students.

| | | |
|---|---|---|
| Butler, Thomas | *Philadelphia, Pa.*, | Paige Hall, 32. |
| Dickins, Curtis Hoyt | *Portsmouth, N. H.*, | Absent. |
| Faunce, William Henry | *Campello* | Paige Hall, 34. |
| Kenyon, John Humphrey Plummer | *Hope, Me.* | 156 Boston Ave. |
| Selman, Marcia Martin | *Marblehead* | 90 Curtis St. |
| Tillinghast, Anna B. Moulton, | *Tufts College* | Heth Aleph Res House. |

## SUMMARY.

| | |
|---|---|
| Senior Class | 7 |
| Middle Class | 8 |
| Junior Class | 15 |
| Sub-Junior Class | 7 |
| Special Students | 6 |
| | 43 |

# The Divinity School.

The Divinity School is one of the departments of Tufts College, the general advantages of which are enjoyed by all its members in common. The College Library, the Museum of Natural History, the Gymnasium are open to all. Courses of study and lectures in the College of Letters are open to the Divinity Students, subject, however, to the discretion of the Faculty. The graduates of the Divinity School in common with the graduates of the other departments are enrolled in the Quinquennial Catalogue of the College, and are eligible to membership in the Alumni Association of Tufts College.

## REQUIREMENTS FOR ADMISSION.

Candidates unknown to the Faculty must bring satisfactory testimonials of good character. They must believe in the Christian religion, and have a sincere purpose to devote their lives to the Christian ministry. It is expected that they will present themselves on the day preceding the first day of the academic year.

Bachelors of Arts are admitted to a three-years course, without examination, to be candidates for the degree of Bachelor of Divinity. Candidates for this degree who are not Bachelors of Arts are required to take a four-years course, and to well sustain an examination on average passages from the Latin of Cæsar, Cicero, and Virgil; and on average passages from the Greek of Xenophon, Homer, and the Gospels. They are also required to pass a satisfactory examination in Greek, Roman, English, and American History; in English Grammar and Composition; in Rhetoric; and in English Literature.

Others whose age or circumstances forbid so extensive preparation, are admitted to the privileges of the school, to take such studies in the regular classes as are suited to their attainments and needs. It is recognized that earnest and capable men aspire to the Christian Ministry, who are not able to make the formal preparation required of those who enter to be candidates for the degree.

**Alternative.** — Ability to read simple prose in French or German, and to write in French or German a paragraph upon an assigned subject, is accepted as an alternative for the requirement in Latin.

ENGLISH GRAMMAR AND COMPOSITION. — Spelling, punctuation, structure of sentences, correct use of words, clearness of expression.

The examination will consist (1) in criticising specimens of incorrect English; (2) in writing a short composition on a subject assigned. Subjects for composition will be drawn from the following standard works in English literature. All the books named for the given year are to be read, and, from two or three of them subjects will be assigned at the time of examination.

For 1895. — Shakespeare's Merchant of Venice, and Twelfth Night; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Longfellow's Evangeline; the Sir Roger de Coverley Papers in the Spectator; Macaulay's Essays on Milton and Addison; Webster's First Bunker Hill Oration; Irving's Sketch Book; Scott's Abbot.

For 1896. — Shakespeare's Merchant of Venice, and Midsummer Night's Dream; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Longfellow's Evangeline; Macaulay's Essay on Milton; Defoe's History of the Plague in London; Scott's Woodstock; Webster's First Bunker Hill Oration; Irving's Tales of a Traveller; George Eliot's Silas Marner.

For 1897. — Shakespeare's As You Like It, and Merchant of Venice; Defoe's History of the Plague in London; Burke's Speech on Conciliation with America; Scott's Marmion; Macaulay's Life of Samuel Johnson; Irving's Tales of a Traveller; Hawthorne's Twice Told Tales; Longfellow's Evangeline; George Eliot's Silas Marner.

Applicants from other Theological Institutions whose course of study is the equivalent of that pursued in this institution, will be received *ad eundem*.

# Course of Study.

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## SUB-JUNIOR CLASS.

**Psychology.** — The Intellect; The Sensibilities; The Will; Leading Questions of Mental Philosophy. *Three hours a week for the first term.* PROFESSOR TOUSEY.

**Logic.** — The First Principles of Logic; Concepts and Propositions; Immediate Inference; Deduction; Induction; Analogy; Hypothesis. *Four hours a week for the second term.* PROFESSOR TOUSEY.

**Rhetoric.** — Principles of Effective Speech; Rhetorical Analysis; Themes. *Three hours a week for one third of the year.* PROFESSOR LEONARD.

**Old Testament.** — Hebrew History. *Four hours a week.* — * Hebrew Language (optional). *Two hours a week.* PROFESSOR CURTIS.

**Oratory.** — Practical Exercises in the reading of Scripture and Hymns. *Two hours a week for the second term.* PROFESSOR MAULSBY.

## JUNIOR CLASS.

**Logic.** — Fallacies; Analysis of Arguments; Ethics of Belief. *Two hours a week for the first term.* PROFESSOR TOUSEY.

**Old Testament.** — * Old Testament Theology. *Two hours a week.* — Advanced Hebrew Language Studies (optional). *Two hours a week.* PROFESSOR CURTIS.

**New Testament.** — Introduction to the Gospels; Textual Criticism; Hermeneutics; Life of Jesus, from the Greek of the four Gospels, with studies from the life of his times. *Four hours a week.* PROFESSOR HARMON.

**Church History.** — History of the Church, of the Sects, and of Doctrines, from the Apostles to the Present Time; History of Doubt. *Four hours a week.* PROFESSOR KNIGHT.

***Applied Christianity.** — A study of the facts in Christian history with reference to the influence of Christianity upon individual and social life. PROFESSOR WOODBRIDGE.

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* Omitted this year.

**Homiletics.** — History of Preaching; The Idea and Structure of the Sermon; Homiletic Analysis. *Two hours a week for two thirds of the year.* PROFESSOR LEONARD.

**Oratory.** — Practice in the reading of Scripture, Hymns, and Sermon-literature. *Two hours a week for the first term.*
PROFESSOR MAULSBY.

## MIDDLE CLASS.

**Old Testament.** — Old Testament Sociology. *Two hours a week.*
PROFESSOR CURTIS.

**New Testament.** — Introduction to Acts and the Epistles; Life of the Apostolic Church, from the Greek of Acts and the Epistles, with studies from the life of the times. *Four hours a week.*
PROFESSOR HARMON.

**Ethics.** — The Moral Nature; Ethical Theory; Practical Ethics; Ethics and Theism. *Three hours a week for the year.*
PROFESSOR TOUSEY.

**Systematic Theology.** — Theology; Anthropology; Soteriology; Eschatology; Critical Study of Modern Doctrines. *Four hours a week for the first term, and three for the second term.*
PROFESSOR KNIGHT.

**Homiletics.** — Study of Sermons of Eminent Preachers; Lectures; Sermon Writing and Preaching. *Three hours a week.*
PROFESSOR LEONARD.

***Applied Christianity.** — The Church as it exists to-day; its office in the present time; its existing forms of effort; its opportunities and instruments for successful service; actual work in missions and charities. PROFESSOR WOODBRIDGE.

## SENIOR CLASS.

**New Testament.** — New Testament Theology. The Teachings of Jesus; Their Several Interpretations in the different books of the New Testament. *Two hours a week for two thirds of the year.*
PROFESSOR HARMON.

**Comparative Theology.** — The Religions of Ancient Egypt and Chaldæa; Hinduism; Buddhism; Confucianism; Taouism; Parseeism; Mohammedanism. *Three hours a week for the first third of the year.*
PROFESSOR KNIGHT.

**Philosophy of Theism.** — Limits of the Intelligence; Theistic Arguments; Special Studies with reference to the Evidences of Final Causes in Nature; Anti-Theistic Theories. *Three hours a week.*
PROFESSOR TOUSEY.

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* Omitted this year.

**Political Economy.** — Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, Lectures, and Independent Investigations dealing with the History of Economics, Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Three hours a week.*

PRESIDENT CAPEN.

**Homiletics.** — Homiletic Analysis; Lectures on Preaching; Composition and Delivery of Sermons. *Three hours a week.*

PROFESSOR LEONARD.

* **Applied Christianity.** — The Pastor's Personal Qualifications and Duties; His Relations to a single Congregation, and to Society; Methods of Christian Work; The Conduct of Public Worship; The Mode of Conducting the Special Services of the Church; Actual Work in Missions and Charities. PROFESSOR WOODBRIDGE.

**Pastoral Care.** — Personal Qualifications and Duties of the Pastor; the Administration of Religion in General; Organized Work in the Parish. *Three hours a week for two thirds of the year.*

PROFESSOR LEONARD.

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* Omitted this year.

# Departments of Instruction.

**Psychology.** — The direct study of mental phenomena is encouraged, and the student is trained in the methods of psychological research. At suitable points attention is called to the great philosophical questions that have their origin in the study of mind. The aim throughout is eminently practical; and, while seeking a consistent theory of mental phenomena, there is constant reference to the professional uses of the science, — to the bearing of psychological law upon self-culture, and upon the arts of instructing and persuading men. Special effort is also made to supply the psychological data of the subsequent studies of the course.

**Logic.** — The Sub-Juniors receive instruction in the usual topics of an academic course. Considerable time is given to logical analysis and the employment of the inductive method as respects both discovery and proof.

The Juniors are exercised more especially in the application of logical principles. A review of the fallacious tendencies of the mind is followed by an extended study of Fallacies, as exemplified in the practical reasoning of men. The course concludes with a brief study in the Ethics of Belief. Under this head the nature and conditions of belief are discussed, the general principles of evidence reviewed, and certain current misconceptions exposed; the aim being to enforce the duty of rationalizing our beliefs, and while pointing out the limitations of the reason, to develop confidence in its actual findings, and a proper fortitude of conviction.

**Rhetoric.** — The subjects of study are those usually discussed in the best treatises on Practical Rhetoric, especially in the chapters which deal with the art of constructing discourse, and with the methods of applying the principles of rhetoric in actual literary work.

**Old Testament.** — I. HEBREW: The aim is a working knowledge of the language of the Old Testament. The first part of the year is devoted to the grammar and the vocabulary of the more common words, with the reading of easy prose. The second part of the year is occupied with exegetical and critical readings from the Pentateuch, with especial reference to modern theories.

II. ADVANCED HEBREW: This is a continuation of Course I. Selections from ancient, middle, and later Hebrew are read, and the various critical questions examined from the point of view of the changed vocabulary and the growing ethical and religious insight.

The courses in the Hebrew language are elective, and aim to supplement the work of the other courses, being at once more technical and more thorough, and leading naturally to independent study and research.

III. HEBREW HISTORY: The aim is to impart a knowledge of Israelitish history from its beginning to its close. The text-book is the revised version of the Old Testament; and each reading is followed by a lecture on the part read in explanation and elucidation of the text. So far as possible, books and parts of books are read in chronological order, and especial attention is paid to recent discoveries, Assyrian, Babylonian, Palestinian.

IV. OLD TESTAMENT THEOLOGY: The purpose is to systematize and emphasize the salient and permanent elements in Old Testament Religion. Some of the subjects treated are, The names and attributes of God, Creation, and Providence; Sin and Redemption; The Moral Life. Available treatises are used as texts, and lectures are given on the canon and text, and on disputed points as to the date and meaning of some of the more difficult books.

V. OLD TESTAMENT SOCIOLOGY: The effort is to give, by means of lectures, a view of the social development of man as illustrated in Hebrew History. The method is inductive and exegetical, while it seeks to do justice to the highest ideals of the Biblical authors. The main divisions of the study are, Social Beginnings, The Family, The State, Economics, and the influence upon these Subjects of the Biblical Religion and Morality.

Readings are assigned in the various histories and theologies of the Old Testament, and in the Commentaries.

**New Testament.** — In the Junior Year the sources of the text of the New Testament are considered with the principles employed in determining the true text, the aim being to render the student intelligent as to the procedure in Textual Criticism, and the bearing this procedure has on the work of exegesis. The History of the Canon for the first two centuries, and the historical and literary criticism of the Gospels, are next treated, to secure on the part of the student an understanding of the principal problems involved and of the grounds of their discussion, the habit of sober and sound criticism, and a knowledge of the nature and contents of the Gospel writings.

In dealing with the Life of Jesus, notes on methods of correct interpretation are given the class, and their application is required in its exegetical work. The significant points and phases in the life and ministry of Jesus are selected and considered, passages from the Greek of the four Gospels being employed, to obtain a knowledge of the mind of Jesus, his relations to the parties and people of his times, the methods he pursued in his ministry, and the course of facts in his life. Incident to this study, the critical points in dispute are considered as they arise. Historical and archæological questions are examined in their natural connection.

In the Middle Year the History of the Apostolic Church is pursued, the Book of Acts being used as the basis. This writing is first examined as a historical authority; passages from it in Greek are chosen, giving the significant stages in the external growth of the church and in its internal development; and these are studied with the aim to trace the first realization of the life of Jesus in the world. The Epistles of St. Paul are critically examined in the order of their origin in his ministry. The introduction to Hebrews and to the Catholic Epistles concludes the year's work.

In the Senior Year the Theology of the New Testament is taken up. The attempt is made to discover the teaching of Jesus contained in the Synoptic Gospels. With this teaching as the basis, the individual interpretations of the several Synoptists, of the author of the Fourth Gospel, of St. Paul in his earlier and later epistles, of the author of Hebrews, and the writers of the Catholic Epistles, are compared, each writing being first considered by itself. The aim is to obtain the common elements of teaching, and also what is distinctive in each writer and time.

**Church History.** — The purpose is to secure a knowledge of the leading facts and forces in the history of the Christian Church in its various branches. By such a knowledge, discovering the causes now at work in religion, the student obtains a grasp of present facts and problems such as he can obtain from no other source. Incidentally he becomes familiar with theological terms, and is furnished with the tools of theological work. Also he is constantly instructed and inspired by the story of the great and good who have made the Church what it is. And in general, since in some degree the individual grows as the mass has grown, he finds in this study an education, an orderly development of his faculties.

The topics generally studied in regard to each period are: The External Growth of the Church, and its Relations to the State; the Internal Organization; Intellectual Life and Doctrine; Moral Life; the Form and Substance of Worship. In the latter part of the year special study is made of the chief religious sects in the United States; and, lastly, of the History of Doubt.

The books used by the student are mostly contained in the Library of the College and in that of the Universalist Historical Society. They include Migne's edition of the Fathers; translations of the ante-Nicene Fathers, and others; the chief secondary authorities on general Church History, such as the works of Schaff, Fisher, Neander, Alzog; and the special historical works of Fisher, Müller, Dorner, Briggs, Eddy, Ballou.

In preparation for the regular class-room exercise, the student is provided with an analysis of each topic in order, and with references to original and secondary authorities. The student brings the result of his investigation to the class-room for criticism by his associates and instructor. At the completion of each topic the results are organized, and a written review held, the papers of which are returned, with comments as to truthfulness and mode of handling.

The students are also instructed in the methods of original investigation from primary authorities; and, especially in the history of doctrines, they prepare several pieces of original work during the year.

**Comparative Theology.** — The primary aim of this study is a general knowledge and a catholic temper regarding the non-Christian religions. A secondary utility is found in that a candid study of the excellencies and defects of many religions renders the student more able to reject the false, and more inclined to rest in the true, and to give it his confidence and strength.

The sources of information to which the student is referred are the Records of the Past, Müller's edition of the Sacred Books of the East, Müller's own writings, the series entitled Non-Christian Religious Systems; and, in addition, the works of Rawlinson, Wilkinson, Sayce, Johnson, Barth, Legge, Oldenberg, Edkins, Haug, and others. Considerable use is also made of articles in the Encyclopædia Britannica.

The religions studied are those of ancient Egypt and Chaldæa; Hinduism, ancient and modern; the religions of Gautama Buddha, Confucius, Laou-tsze, Zoroaster, and Mohammed.

The chief topics noted are: The Deity; the Forms and Meaning of Worship; the Theory of Ethics, and the Sanctions of Moral Life, including the Scheme of Salvation; the Actual Condition of the People representing each religion.

For the study of each topic in turn, the class is furnished with a syllabus and references. The results of their investigations are criticised and co-ordinated by students and instructor in the class-room.

The main purposes of this study are further secured by frequent inductive reviews, oral and written.

**Ethics.** — Analytical and inductive study of the moral experience is followed by an attempt to develop a correct moral theory. Attention is given to the leading questions in ethical philosophy. Such doctrines as Sentimentalism, Hedonism, Utilitarianism, Intuitionalism, and Determinism are studied, not merely in a critical spirit, but with a view to discover the special aspects of truth for which they stand.

During the second half of the year the class attends more especially to Practical Ethics, dealing with the leading contemporary problems, such as Education, Charities, State Aid, Temperance, Socialism, etc. Some attention is also given to Casuistry. The course concludes with a review of what is distinctively known as Christian Ethics. The instruction throughout is shaped to bring into clearness the fundamental principles of morality, and to show their importance in the conduct of the personal life and in the moral guidance of others.

**Philosophy of Theism.** — After some discussion of Agnosticism and other antecedent objections to Theism, the various modes of the theistic argument are reviewed, their grounds scrutinized, and their logical value carefully considered. In discussing the attributes of God, and his relation to the universe, Pantheism and Pessimism receive somewhat special notice. The general method here, as in ethics, is to employ treatises available as texts, and to supplement them by means of annotations, lectures, and parallel readings, the aim being to lead the student to the sources of evidence, and to establish a vigilant and correct method of inquiry. Much importance is attached to the dialectic of the class-room, as securing a ready command of resources, and as a corrective of ill-defined notions and hasty inference. An effort is made to treat subjects in the light of contemporary criticism and the latest developments of science, and, by testing and chastening conclusions, to provide against fanaticism on the one hand, and frivolity of judgment on the other.

**Systematic Theology.** — The purpose is, primarily, to assist the student to think independently on theological subjects, and to abide in the consequences. In pursuing this purpose attempt is made to co-ordinate the products of Biblical Theology, Religious History, Natural Theology, Ethics, and, indeed, of all the proper sources of material, and thus to produce a scientific theology. It is believed that such a system will deserve and receive the student's confidence, and will enlist his energies.

The subject has four great divisions, — the Doctrine of God, the Doctrine of Man, the Doctrine of Salvation, and the Doctrine of the Future Life. The traditional sub-divisions are noted historically, but are accepted only so far as they seem to rest on essential principles or the real relations of truth.

The method includes several stages : —

1. The outline history of thought on the topic in hand, or the analysis and classification of opinions and theories according to their logical relations.

2. The collection of the facts, so far as given in the present

state of knowledge, and the criticism of the theories on the basis of the facts.

3. The organization of the results into a scientific product.

4. Illustrative applications to practical problems, — ecclesiastical, political, social, and personal.

This method requires frequent reference to books used in the departments whose products are here co-ordinated, and to the theological works of A. H. Strong, Charles Hodge, James Martineau, Robert Flint, J. A. Dorner, H. Martensen, J. Müller, and other representative teachers of all times and faiths.

The student is furnished with references to the various sources of material, he is instructed in the method of inquiry, and his results are criticised in the class-room. The occasional written examinations require original work, in part, and one original essay from each student is required within the year.

**Homiletics.** — The course in Homiletics covers two thirds of the Junior year and all of the Middle and Senior years, and includes the study of the most characteristic and instructive periods in the history of preaching; dictations and lectures on the idea and structure of the Sermon; analyses of portions of the Old and the New Testaments, with a view to the homiletical use of texts; the study of printed sermons, with special reference to form, expression, and the character and range of illustration; the composition and delivery of sermons, not less than six during the year, all of which are criticised by the class and by the professor; lectures during the Senior year on Invention and Arrangement of Material, Modes of Development, Style in Spoken Discourse, Helps in Sermon-Preparation, Illustrations and Use of Anecdote, the Homiletic Habit, Modern Schools of Preaching, Philosophy of Preaching, Personality in Preaching, Character and Preaching.

**Applied Christianity.** — I. The aim in the first division of this study is, by means of historic science, to discover the influence of Christianity on the life of the world. It therefore traces the origin of Christian institutions, organizations, and methods from early times to the present day, and exhibits the changes wrought by Christianity in the character of the individual, and in the customs of society in various lands. The whole effort is to see in what respect Christianity is a principle of ethical and spiritual life, and an active influence affecting beliefs, outward habits, national manners and laws.

II. The second part of this course is devoted to a study of the Christian Church as it exists in modern times, giving attention to the constitution, organization, government of the various sects, and also to methods of work in missions, in reforms, and charities as these are undertaken by Christians of to-day. This study is followed with a discussion of the visible opportunities for work proper to the Church and to Christians, and of the instrumentalities which the most successful working churches employ. The constant effort is to know the Christendom in which our lot is cast that the ministers of Christ may be better prepared to take up the duties which devolve upon them.

III. The final topic in this department is the pastor's office. The subjects discussed relate to the more private and personal care which the minister exercises towards the members of a single congregation, or towards others whom he may be expected to influence. Careful study is invited to the qualifications, spiritual, mental, social, of a good pastor, the methods of forming and strengthening a parish, the conduct of public worship, and the mode of conducting the special services of the church, — baptisms, confirmation, the Lord's Supper, marriage, and the burial of the dead. The prime object in this part of the course is the practical preparation of the pastor for his sacred duties.

The work (II. and III.) of the Middle and Senior years is supplemented with lectures by clergymen and others, who are actively engaged in missions and charities; and the students are encouraged to visit churches and stations in the neighboring cities, that they may study the methods of those who are in living contact with want and suffering; engage in actual benevolent work under the direction of skilled workers, and make report of what they see and do for discussion in the classroom. This special work is meant to meet the demand for a closer contact between the church and the daily lives of the people, and for a more sympathetic interest in their social and industrial problems.

**Pastoral Theology.**—Historic basis is found for this particular study in the Apostolic Church, — its organization, polity, and methods of work, — and in the instituted life of modern churches, Prelatical, Presbyterian, Congregational; and results reached are considered with reference to the government and methods of the Universalist Church.

The course further provides for the discussion of the spiritual, mental, and social qualifications of the pastor; the study of the forms and conduct of public worship; the practical illustration of pastoral oversight and visitation, the methods of building and uniting a parish, and the theories of church-work in Sunday schools, missions, charities; the study of modern social and industrial problems; and lectures upon the official duties of the Christian minister.

From year to year the course in Pastoral Theology is supplemented with special lectures from clergymen who are engaged in the active work of the ministry.

**Oratory.** — The object of the instruction in the department of Oratory is to gain a natural as well as reverent manner of reading the Bible and the hymn-book, and also to cultivate in preaching a delivery that shall be forcible and sincere. To this end the class exercises consist of actual practice in reading selected hymns and portions of the Scriptures, with the preaching, in the advanced division, of parts of sermons. The work done is followed by criticism and suggestion from the instructor and the class. A special class offers opportunity for practice in extemporaneous speaking.

# General Information.

## RELIGIOUS EXERCISES.

Devotional services, conducted by the Professors and the Students, are held daily in the chapel. Members of the upper classes prepare sermons and preach them in turn before the class. An active branch of the Young People's Christian Union holds regular meetings for religious conference.

## EXAMINATIONS.

Frequent written reviews are held in all departments; and when any subject is completed, the students are required to pass a written examination thereon.

## LIBRARIES AND LECTURES.

Students have free access to the general library of the College and to the valuable library of the Universalist Historical Society. Important public libraries of Boston are open to students for consultation.

Supplementary lectures, which bear upon the general work of the Christian ministry and upon special subjects of study, are given at intervals throughout the year by well-known clergymen of the vicinity.

## ELECTIVE STUDIES.

Students are permitted to elect studies in other departments of the College, subject, however, to the discretion of the Faculty. Opportunities for pursuing advanced studies are offered to graduates and to others sufficiently qualified.

## GENERAL FACILITIES.

Important facilities for general improvement are offered to students, in the valuable libraries and museums of Boston and vicinity. Elaborate courses of lectures on scientific, social, and literary subjects are presented to the public from time to time. The most noted divines of New England officiate every Sunday within easy distance, and may be studied by the student in respect to their teachings and their methods. It is the policy of the school to encourage the judicious use of these important instrumentalities of culture.

## GYMNASTICS.

At least two years' work in the Gymnasium is ordinarily required of all students. Provision is made for continuing such work according to individual needs.

## THE DEGREE OF MASTER OF ARTS.

THE DEGREE OF MASTER OF ARTS is conferred at the same time with the degree of Bachelor of Divinity upon Bachelors of Arts of Tufts College who have pursued with distinction the full course for B. D. This degree is conferred under the same conditions on Bachelors of Arts of other colleges, whose courses of study have been equivalent to the course for which the degree of A. B. is given by Tufts College.

This degree may also be received by Bachelors of Arts, who do not apply for the degree of Bachelor of Divinity, after taking with credit an approved course of one year or more in this school, under conditions defined in the statement of the Graduate Department.

## BUILDINGS [FOR THE USE OF THE DIVINITY SCHOOL.]

Miner Theological Hall contains eight large, well-lighted, and well-ventilated lecture rooms, and a special room for the meetings of the Faculty. Until other buildings are provided one of the rooms in this hall is used for the Historical and Reference Libraries, and one is appropriately furnished for the Religious Services of the school. A third room in the same hall is furnished as a parlor, and known as the Maria Miner Reception Room.

Paige Hall, the Dormitory of the Divinity School, contains thirty-six single rooms, heated by steam and lighted by gas. Each room is carpeted, and provided with all necessary furniture — except sheets, blankets, pillow-cases, and towels.

Rooms are assigned in the order of application, but no room is reserved for any applicant, who does not appear within one week of the opening of the College year.

At present no provision is made for free dormitory accommodations for the women who enter the Divinity School. As a rule they find homes in families in the neighborhood. The expense for room and board in such families is from four to seven dollars a week. The latter price would probably include steam or furnace heat, and light. The women students in the Divinity School may also find rooms and board in Metcalf Hall on the same terms and subject to the same conditions as apply to the women who enter the College of Letters.

## EXPENSES AND PECUNIARY AID.

No charge is made for tuition, rent of rooms, and use of furniture in Paige Hall, or for use of libraries. The necessary expenses for board, washing, steam heat, gas, care of room, and gymnasium charges do not exceed two hundred and twenty-five dollars a year. The General Convention of Universalists aids students by a system of loans not exceeding one hundred and fifty dollars a year to any one student; and the Faculty of the Divinity School is authorized to assign Dockstader scholarships to those whose circumstances require it. Those students, also, who are in the regular course are permitted to preach, under the direction of the Faculty, during the year and a half preceding their graduation. In this way they may add to their pecuniary resources.

## BONDS AND DEPOSITS.

Each student who enters the Divinity School is required to deposit with the Treasurer of the College either a bond, with two satisfactory sureties, for the amount of fifty dollars, or he may deposit the sum of twenty-five dollars in money, which sum shall bear interest at the rate of four per cent yearly, and shall be returned to the student when he leaves the Divinity School, his term bills first being paid in full.

## LICENSE TO PREACH.

The regular time for applying for licensure is near the close of the first half of the middle year. Before that time the members of the Divinity School are not allowed to preach.

## SCHOLARSHIPS, ETC.

The Greenwood Scholarship. — The income of one thousand dollars, bequeathed by the late Mrs. Eliza M. Greenwood, of Malden, is given in prizes to members of the Divinity School for excellence in the department of Oratory.

Rev. W. S. Perkins, D. D., of Meriden, Conn., provides for an annual prize of twenty-five dollars to encourage extemporaneous preaching.

The Dockstader Scholarships. — The income of ten thousand dollars, given by George A. Dockstader, of New York, is appropriated to the aid of needy and worthy students.

The income of five hundred dollars, given by Rev. John Vannevar, is used in the purchase of books for the Department of Homiletics.

# MEDICAL SCHOOL.

# Faculty of the Medical School.

ELMER H. CAPEN, D. D., President.

ALBERT NOTT, M. D., West Newton.
Dean *and Professor of Physiology.*

CHARLES P. THAYER, M. D., 74 Boylston Street, Boston.
Secretary *and Professor of General, Descriptive and Surgical Anatomy.*

HENRY W. DUDLEY, M. D., Abington.
*Professor of Pathology.*

WILLIAM R. CHIPMAN, A. B., M. D., Chelsea.
*Professor of the Principles and Practice of Surgery and Operative Surgery.*

WALTER L. HALL, M. D., Medford.
*Professor of the Principles and Practice of Medicine.*

JOHN W. JOHNSON, M. D., 20 Worcester Street, Boston.
Treasurer *and Professor of Obstetrics.*

FRANK G. WHEATLEY, A. M., M. D., North Abington.
*Professor of Materia Medica and Therapeutics.*

SAMUEL G. WEBBER, A. B., M. D., 146 Marlboro Street, Boston.
*Professor of Neurology.*

ERNEST W. CUSHING, A. B., M. D., 168 Newbury Street, Boston.
*Professor of Gynæcology.*

ARTHUR E. AUSTIN, A. B., M. D., 585 Washington St., Dorchester.
*Professor of Medical Chemistry.*

CHARLES A. PITKIN, A. M., Ph. D., South Braintree.
*Professor of General Chemistry.*

HAROLD WILLIAMS, A. B., M. D., 225 Marlboro Street, Boston.
*Clinical Professor of Pediatrics.*

JOHN A. TENNEY, M. D., 2 Commonwealth Avenue, Boston.
*Professor of Ophthalmology.*

JOHN L. HILDRETH, A. B., M. D., 14 Garden Street, Cambridge.
*Professor of Clinical Medicine.*

HERBERT L. SMITH, A. M., M. D., 156 Newbury Street, Boston.
*Professor of Clinical Surgery.*

## OTHER INSTRUCTORS.

THOMAS M. DURELL, M. D., Somerville.
*Lecturer on Medical Jurisprudence.*

J. STERLING KINGSLEY, S. D., Tufts College.
*Lecturer on Histology.*

WILLIAM R. WOODBURY, A. B., M. D., 164 Newbury St., Boston.
*Lecturer on Hygiene.*

WILLIAM A. WHITE, M. D., 150 Friend Street, Boston.
*Lecturer on Diseases of Children.*

GEORGE A. WEBSTER, M. D., 708 Tremont Street, Boston.
*Lecturer on Otology.*

FRED H. MORSE, M. D., Melrose.
*Lecturer on Electro-Therapeutics.*

FRANK B. BROWN, M. D., 501 Washington Street, Dorchester.
*Instructor in Bacteriology and Assistant in Pathology.*

WILLIAM P. DERBY, M. D., 421 Marlboro Street, Boston.
*Instructor in Gynœcology, and Assistant in Obstetrics.*

CHARLES G. CUMSTON, M. D., 826 Beacon Street, Brookline.
*Instructor in Gynœcology.*

FRED S. RADDIN, M. D., Chelsea.
*Assistant in Surgery.*

EDWARD E. THORPE, M. D., 711 Boylston Street, Boston.
*Assistant in Medical Chemistry.*

CHARLES L. CUTLER, M. D., Marlboro.
*Assistant in Gynœcology.*

ALBERT E. ROGERS, M. D., 143 Washington Street, Dorchester.
*Assistant in Materia Medica.*

THOMAS F. GREENE, M. D., 316 Warren Street, Roxbury.
*Assistant Demonstrator of Anatomy.*

J. C. D. CLARK, M. D., 31 Bunker Hill Street, Charlestown.
*Assistant in the Theory and Practice of Medicine.*

GEORGE E. WHITEHILL, M. D., Everett.
*Prosector of Anatomy.*

## EXECUTIVE COMMITTEE OF THE MEDICAL FACULTY.

ALBERT NOTT, M. D.
HENRY W. DUDLEY, M. D.
WALTER L. HALL, M. D.
CHARLES P. THAYER, M. D.
WILLIAM R. CHIPMAN, M. D.
JOHN W. JOHNSON, M. D.
FRANK G. WHEATLEY, M. D.

# Students.

## SENIOR CLASS.

| | |
|---|---|
| Bailey, William Howard | *Waltham.* |
| Bertram, William Henry, M. D. | *East Boston.* |
| Bonyman, Harry Evan | *Everett.* |
| Butterworth, Mary Frances | *Revere.* |
| Chandler, Frederick Emerson | *Dorchester.* |
| Davis, Bessie Delano, M. D. | *Cambridgeport.* |
| Dennis, Jane Louise | *Fall River.* |
| Dorr-Bryant, Anna Mary, M. D. | *Boston.* |
| Drew, Maria Emma, M. D. | *Atlantic.* |
| Fleet, William Ernest, M. D. | *Cambridgeport.* |
| Godfrey, Joseph Witter, M. D. | *Concord Junction.* |
| Hands, Anna Carville, M. D. | *North Cambridge.* |
| Hughes, Laura Ann Cleophas | *Boston.* |
| Kinney, Eunice Draper, M. D. | *Boston.* |
| Leavitt, George Albert | *West Medford.* |
| MacDonell, John, M. D. | *South Boston.* |
| Ordway, Charles Anthony | *Concord, N. H.* |
| Pedrick, Stephen Augustus | *Boston.* |
| Putnam, Charles Willis | *Peabody.* |
| Rabinovich, Helen, M. D. | *Russia.* |
| Reed, Asa Pingree | *South Bridgton, Me.* |
| Russell, William Henry, M. D. | *Ipswich.* |
| Scoboria, Peter Gilmore | *South Chelmsford.* |
| Tilton, Letitia Marie, M. D. | *Boston.* |
| Walker, William, M. D. | *Roxbury.* |

## MIDDLE CLASS.

| | |
|---|---|
| Avedisian, Avedis der | *Armenia.* |
| Barry, James Henry | *Charlestown.* |
| Bourn, Cora Etta | *Providence, R. I.* |
| Bowker, Jane Howorth | *Brookline.* |
| Brandon, Flora Sabina | *Boston.* |
| Brightman, Helen | *Acushnet.* |
| Brousseau, William Gilbert | *Boston.* |
| Cummings, William Sinnott | *West Stoughton.* |
| Foss, Clarence Winfield | *Roxbury.* |
| French, John Innes | *Woburn.* |

| | |
|---|---|
| Gage, George Asahel | *Holyoke.* |
| Greene, William Henry | *Roxbury.* |
| Holmes, Harry Clinton | *Chelsea.* |
| Johnson, Henry Peyton | *Richmond, Va.* |
| Kelleher, Patrick Francis | *Cambridge.* |
| Leavitt, Edwin Alden | *Boston.* |
| Littig, Marq D. | *Davenport, Ia.* |
| McNamara, Eugene Thomas | *Camden, Me.* |
| Moir, Archibald Campbell Milton | *Cambridge.* |
| Morse, Frederick Otis | *East Boston.* |
| Patch, Annie Sophia Kenney | *Farmington, N. H.* |
| Pillsbury, Ernest Dean | *Somerville.* |
| Pond, Eleanor Dorcas, A. B. | *Medway.* |
| Rice, Walter Henry | *Waltham.* |
| Robinson, Fred Hilliard | *Somerville.* |
| Ryan, John Francis | *Brookline.* |
| Smith, Annie Manson, B. S. | *Bedford.* |
| Stevens, Sarah Elmina | *Roxbury.* |

## FRESHMAN CLASS.

| | |
|---|---|
| Ayers, Seabury Rogers | *Roxbury.* |
| Bailey, Ernest Harry | *Northfield, Vt.* |
| Birmingham, Louis Howland | *Somerville.* |
| Brehaut, William Albert | *Summerside, P. E. I.* |
| Brooks, Simpson Pomeroy, A. B. | *Springfield.* |
| Bryant, Edward LeRoy | *Boston.* |
| Burgess, Charles James | *Lawrence.* |
| Cochrane, George William | *Franklin.* |
| Cota, Henry Joseph | *Boston.* |
| Djelalian, Hairabed S. | *Armenia.* |
| Ford, Michael Angelo | *Rockland.* |
| Frew, Angus Matthew | *Cambridge.* |
| Frost, Flora Eva | *Granby.* |
| Galpin, George Henry | *Somerville.* |
| Gilman, Charles Sleeper | *Lakeport, N. H.* |
| Goddard, Anthony Marvin | *Hyde Park, Vt.* |
| Hart, Francis Joseph | *Charlestown.* |
| Healey, John Aloysius | *East Boston.* |
| Hopkins, Bertrand Hiram | *West Medford.* |
| Howland, Edgar Joseph | *Somerville.* |
| Kavanagh, Edward, Jr. | *Ipswich.* |
| Mackintosh, Ernest Robert | *Jamaica Plain.* |
| Mahoney, Frank Augustus | *South Boston.* |
| Mann, Gordon | *Rockland.* |
| McGee, Fannie Maria | *Newton.* |

| | |
|---|---|
| Murphy, Jeremiah Edward | *Somerville.* |
| Peabody, Sophia Reed | *Lawrence.* |
| Pigott, Thomas Edmund | *Winthrop.* |
| Place, Ralph Waldo | *Roxbury.* |
| Powers, Kate Gertrude | *Brockton.* |
| Proctor, John Donald | *Keene, N. H.* |
| Ramsdell, Charles Joshua | *Bradford.* |
| Riley, Elizabeth Angela | *Chelsea.* |
| Sexton, James Henry, Jr. | *Malden.* |
| Shaw, Thomas Wignall | *Somerville.* |
| Shisler, William Henry | *Fort Erie, Ontario.* |
| Summers, Albert Henry | *Braintree.* |
| Stockwell, Albert Winfield | *Boston.* |
| Stowe, Irving Elmer | *Charlestown.* |
| Thompson, James Albert | *Charlestown.* |
| Webber, Sarah Southworth | *Boston.* |
| Whitehouse, Albert | *Boston.* |

# The Medical School.

The Tufts College Medical School was opened in October, 1893, the purpose being to provide a thorough course of instruction in medical science, with moderate charges, and open to both sexes on equal terms. The enrolment of students for the College year 1893–4 was eighty, and twenty-two were graduated with the degree of Doctor of Medicine at Commencement in June, 1894, eight of this number being women. For the present year the accommodations of the school have been greatly increased, the corps of instruction has been strengthened, and the clinical and other advantages have been improved, so that the school is prepared to offer every opportunity needed by the undergraduate in medicine, and in some directions for graduate and research work.

The School is located at 188 Boylston Street, in the city of Boston, directly opposite the Public Gardens, and within a few steps of Park Square, one of the great street-car centres of the city, making it convenient to all the hospitals, dispensaries and public buildings, and the railway stations.

Upon the first floor occupied by the College are the lecture hall, Faculty room, and the women's study and toilet rooms. The lecture hall is supplied with comfortable chairs upon a raised platform, giving the student an unobstructed view of the lecturer, and the illustrations of the subject upon which he is engaged. This room has an abundance of light, while the blackboards and charts add to the convenience of demonstration. The room for women students is large, comfortable, and well supplied with chairs, tables, and desks, and adjoining it is the women's toilet room.

Upon the next floor are the smaller lecture room, the bacteriological laboratory, the private room of the Professor of

Medical Chemistry, and the men's study room. The laboratory upon this floor is well adapted to the uses for which it was designed, being fitted with a firm stationary table, and with individual artificial lights of the most modern construction, thus enabling the student to use his microscope without dependence upon daylight. It is well-equipped with microscopes and all necessary appliances.

Upon the third floor are the general chemistry laboratory and dissecting room. The laboratory is fitted with individual lockers, which are furnished with the various re-agents and glassware used by the student, which are distributed to him from the private room of the Professor of Chemistry on the same floor. The dissecting room is well-lighted, and furnished with modern inclined tables, to which are attached receptacles for all refuse matter.

Students of the Medical School have access, for work in Histology and Embryology, to the admirable laboratories of the biological department of Tufts College, in the Barnum Museum at College Hill. A statement of the facilities of this department may be found in the General Catalogue of Tufts College.

The Medical School at present offers a course of three years, leading to the degree of Doctor of Medicine.

# Departments of Instruction.

## FRESHMAN YEAR.

### Anatomy.

PROFESSOR THAYER. *Three hours a week.*

The course in Anatomy consists of lectures and demonstrations, illustrated by plates, models, and dissections. Especial attention is devoted to Surgical Anatomy, and the relations of parts and organs in the various regions of the body are referred to, and their importance in the operations is emphasized and explained. In the dissecting room the student is required to carry on his work with neatness and precision, under the supervision of the Demonstrator, thus acquiring that familiarity with the use of instruments which is essential to the practitioner. The new dissecting room is fitted with all modern conveniences, and is under the personal supervision of the Professor of Anatomy. The dissections are made under the direction of the Demonstrator of Anatomy, who will assign the parts to students and give all necessary assistance and advice. Abundance of material is furnished students at cost.

### Physiology.

PROFESSOR NOTT. *Two hours a week.*

This branch is taught by means of didactic lectures, frequent quizzing, and, so far as practicable, demonstrations upon the lower animals. Cellular Physiology, holding as it does a high and important position, will be taught in its modern acceptation. Physiology, being naturally divided into several departments, will be considered in its relations to Anatomy, Chemistry, Histology, and Pathology. Especial attention will be given to the nervous system, digestion, absorption, secretion, the blood and its circulation. The student can thus study the phenomena which the human body exhibits in every department of its vital operations.

### General Chemistry.

PROFESSOR PITKIN. *Five hours a week.*

This course consists of Descriptive Chemistry and Qualitative Analysis, with so much of Theoretical Chemistry as is necessary for a proper understanding of the subject. The instruction is by lectures, recitations, and practical work by the students. Especial attention is given to Qualitative Analysis, both for the sake of the valuable training which it imparts and the knowledge of Chemistry which is incidentally gained. The importance of such knowledge is evinced by the fact that it is the only non-professional subject which is required in most medical schools. The carbon compounds are treated as fully as time allows, and it is intended to require a short course of laboratory work in connection with them. The aim is to impart such general knowledge of the subject as is necessary to the intelligent physician. At the same time any who may wish to pursue the study further than is required of every graduate, may do so by special arrangement. Facilities for a limited amount of Quantitative work will be furnished to those who desire.

### Histology and Embryology.

PROFESSOR KINGSLEY. *Two hours a week.*

These subjects are taught by lectures and demonstrations, and in the case of Histology by laboratory work upon the primary tissues and the minute anatomy of these organs, an autoptic knowledge of which is necessary for the clear comprehension of the more common pathological conditions. The course in Embryology is comparative, the endeavor being to throw light upon not only those points which are of value in Obstetrics, but to render more easy of comprehension the structure and arrangement of the various organs, cranial nerves, eye and ear, uro-genital system, and other subjects which not infre quently cause the student no little perplexity. The laboratory of the department is well equipped with microscopes, microtomes, reagents, etc., as well as with slides, diagrams, and material for student work. In Embryology, facilities are afforded for research work for all who are prepared to carry on investigation, and graduate work will be outlined upon application to the instructor.

## MIDDLE YEAR.

### Medical Chemistry.

PROFESSOR AUSTIN. *Four hours a week.*

Owing to the increased facilities afforded by the management of the school, the scope of instruction in this subject has been largely increased this year, so that now there is offered, in addition to lectures and recitations, practical work in urinalysis, including careful investigation with the microscope, analysis of bile, gastric juice, saliva, blood, and drinking water. Quantitative analysis, in so far as it pertains to these subjects, is conducted by the students in the laboratory, and the results obtained are carefully filed for future reference. Photo-micrographs have been largely used as a means of familiarizing students with the appearances of microscopic objects. The latter half of the year is devoted to toxicology, and students are required to examine poisons, not only in their pure state but mixed with organic matter; to which has been added this year, the examination of various food stuffs which are commonly adulterated. At each examination a written analysis is required of a specimen of milk, urine, and a poison.

### Pathology.

PROFESSOR DUDLEY. *Two hours a week.*

Instruction in this department will consist of lectures, quizzes, and recitations. It will be the aim to impress upon the student the importance of a thorough knowledge of the cause, career, and termination of pathological processes, giving frequent illustrations by morbid specimens.

### Materia Medica and Therapeutics.

PROFESSOR WHEATLEY. *Three hours a week.*

Instruction in this department will consist of lectures, and recitations, three hours a week during the year. The therapeutical application of remedies will receive especial attention.

### Bacteriology.

DR. BROWN. *Five hours a week.*

The course in Bacteriology, under the supervision of the Instructor, consists of one didactic lecture weekly, and four hours in the laboratory, where the various methods of isolating and identifying the different species of micro-organisms by cultivation and staining are thoroughly taught, and opportunities for original research are given. The laboratory is supplied with the best Leitz's microscopes, recently imported from Germany, and is otherwise equipped for this study. Each member of the class will have a microscope for use while in the laboratory.

## SENIOR YEAR.

### Ophthalmology.

PROFESSOR TENNEY. *One hour a week.*

The instruction in this department will be of the most practical character, being designed to prepare the student to treat such diseases of the eye as will be met with in general practice. The lectures will be fully illustrated by drawings and apparatus, and everything set forth in the didactic lectures will, as far as is practicable, be again brought to the attention of the student at the Suffolk Dispensary, where clinical material is amply sufficient for the purpose.

### Legal Medicine.

DR. DURELL. *One hour a week.*

The course in Legal Medicine consists of one lecture each week during the first term, and will include all of the subjects which are usually included under the head of medical jurisprudence, together with a thorough course in the making of medico-legal autopsies, with as many practical demonstrations as possible. The duty of a physician to the Commonwealth, and his rights, both as a medical expert and as an ordinary witness, will be explained.

### Surgery.

PROFESSOR CHIPMAN. *Three hours a week.*

Two lectures and one recitation will be given weekly during the first term. In the second term there will be two lectures each week by Professor Chipman, and one recitation and lecture given by the assistant, Dr. Raddin. A considerable portion of the surgical course is devoted to pathology, for the reason that if students do not become well grounded in it during their college course they are very unlikely to take it up after becoming occupied with the details of practice. The course in operative and minor surgery is very thorough, and includes all the usual operations. Material for the illustration of this course is abundant, and students are given opportunities to operate upon the cadaver. In the department of principles and practice of surgery, particular attention is paid to the subject of diagnosis, and all didactic teaching upon the various branches of surgery is abundantly illustrated in the clinical material furnished by the several hospitals and dispensaries of the city.

As in the past, it will be the aim to make the Surgical Clinics of the greatest value to the student. The subject of Antiseptic Surgery in all that pertains to the knowledge and direct application of the same will be fully illustrated and shown as far as practicable. Fractures and dislocations will be treated by a thorough course of lectures and illustrations. The various fractures and dislocations will be illustrated by a specially prepared skeleton. The employment of the various means for the reduction of dislocations and the preparation of splints and other surgical appliances will be taught in the lecture room.

### Obstetrics.

PROFESSOR JOHNSON. *Three hours a week.*

The instruction in Obstetrics will consist of lectures illustrated by plates and manikins, with recitations, three times a week.

Especial stress is put upon diagnosis, the mechanism of labor, and care during convalescence. So far as possible, the various operations will be demonstrated upon the cadaver. Cases of Obstetrics will be furnished students under the charge of the Professor and his assistant.

### Clinical Medicine.

PROFESSOR HILDRETH. *Two hours a week.*

Instruction in this department is given by clinical lectures, visits to the dispensary, and other exercises. Students are furnished cases and required to report upon them. Auscultation and Percussion and Laryngoscopy will be taught both theoretically and practically. The subject of diagnoses and the writing of reports of cases will also receive especial attention.

### Theory and Practice of Medicine.

PROFESSOR HALL. *Three hours a week.*

This course consists of two lectures each week by Professor Hall, with clinical illustrations, when necessary or expedient, covering the whole ground of general medicine, — comprising in all sixty lectures.

### Neurology.

PROFESSOR WEBBER. *Two hours a week.*

There will be two lectures each week, during the second term, upon diseases of the nervous system and mental diseases. As preparatory to these, there will be a brief review of the anatomy and physiology of the nervous system so far as necessary to understand the relations of the symptoms to organic changes in the nerve centres. The anatomy of the brain will be demonstrated with special reference to localization of cerebral diseases. The lectures will be both clinical and didactic, and will be illustrated by diagrams, photographs, and microscopic preparations.

### Gynæcology.

PROFESSOR CUSHING. *Three hours a week.*

Instruction is given both by lectures and by clinical teaching. Professor Cushing lectures once each week to the Senior class, and twice weekly sub-divisions of the class receive practical instruction at the Suffolk Dispensary from Instructors Cumston and Derby. Once each week a quiz is held by Assistant Cutler on the lectures of Dr. Cushing. Arrangements have been made, by which students who wish to continue their studies after graduation, may witness major operations in the hospital service of Dr. Cushing.

### Otology.

DR. WEBSTER. *One hour a week.*

Instruction in this department will comprise lectures and clinical demonstrations. The students will have opportunities for seeing cases both in the lecture room and at the hospitals. In addition to seeing disease they will have opportunity for becoming practically familiar with it by treating the patients themselves, under the supervision of the Instructor. The students will thus be prepared to recognize all forms of aural disease and to treat such as do not require a prolonged special training.

### Diseases of Children.

PROFESSOR WILLIAMS. }
DR. WHITE. } *Two hours a week.*

Instruction in this department will consist of lectures, clinical teaching, and clinical conferences, embracing the anatomy, hygiene and diseases of infancy and childhood. The clinical advantages offered to students in this department are very great, and the number of cases shown is large and varied.

### Electro-Therapeutics.

DR. MORSE. *One hour a week.*

In this department will be given a course of lectures involving a study of the properties and of the effects upon the system of the galvanic, the faradic, and the static currents. The rapid advances made within recent years in the application of electricity in surgery, gynæcology, and neurology, as well as in general diseases, make it play an important part in modern diagnosis and therapeutics. The aim of the instruction will be to impart a knowledge of the subject based upon recent investigations and to point out the wide range of usefulness of this important remedial agent, at the same time keeping within conservative limits.

## CLINICAL ADVANTAGES.

Boston, as the largest city of New England, offers unusual clinical facilities to the student of Medicine. The amphitheatres of the Massachusetts General Hospital and the Boston City Hospital are open to the students, and clinics are held at the Boston Dispensary, where fifty thousand patients are annually treated.

In connection with this school, there has been established, at the North End, the Suffolk Dispensary, where several thousand patients are annually treated.

This Dispensary is under the sole control of the Faculty, who constitute its consulting staff, and Senior students are required to be in attendance, thus bringing them in direct contact with methods of diagnosis and treatment.

In the building is a comfortable room where students can remain while awaiting cases of Obstetrics, quite a number of which are always available.

## TEXT-BOOKS.

The first book mentioned is preferred as a Text-Book, the others being recommended as collateral reading.

**Anatomy**: Gray, Quain, Weisse, Holden.

**Physiology**: Landois and Sterling, Kirk's Hand-book, Martin's Human Body.

**General Chemistry**: Witthaus (last edition), Remsen's Laboratory Manual, A. H. Elliott's Qualitative Analysis.

**Medical Chemistry**: Tyson on the Urine, Roberts on Renal and Urinary Diseases.

**Toxicology**: Reese on Medical Jurisprudence and Toxicology, Wormley on Micro-Chemistry of Poisons.

**Materia Medica and Therapeutics**: Bartholow (8th edition), Hare, Wood, United States Dispensatory (1890), Gerrish's Prescription Writing.

**Pathology**: Greene, Billroth, Ziegler.

**Bacteriology**: Woodhead, Sternberg.

**Obstetrics**: Lusk, Playfair, Cazeaux, Winckle.

**Gynæcology**: Diseases of Women by A. Martin, American Text-Book of Gynæcology, Pozzi.

**Surgery**: American Text-Book of Surgery, Treves, Ashurst, Wyeth.

**Clinical Medicine**: DaCosta's Medical Diagnosis, Tyson's Medical Diagnosis, American Text-Book of Theory and Practice.

**Neurology**: Gower, Dana, Gray.

**Mental Diseases**: Cloustin, Spitzka.

**Pediatrics**: Smith, Rotch.

**Ophthalmology**: De Schweinitz, Nettleship, Noyes.

**Medical Dictionary**: Dunglison.

## EXAMINATIONS.

The examinations are held in the College Building at the opening and close of the regular course of lectures, and are in writing. Those at the opening of the course in the Fall are for those commencing the study of medicine, and for students from other colleges who apply for advanced standing, and for those who fail in the Spring.

Examinations at the close of the course in the Spring are as follows: —

*Freshman Year:* Anatomy, including Histology, Physiology, including Hygiene, and General Chemistry.

*Middle Year:* Materia Medica and Therapeutics, Pathology, and Medical Chemistry and Toxicology.

*Senior Year:* Obstetrics, Gynæcology, Surgery, including Ophthalmology, Theory and Practice of Medicine, Clinical Medicine, Clinical Surgery, and two electives.

Senior students shall, before November first of each year, select two branches from the following electives, and pursue the study of the two branches as special studies.

Electives: Neurology, Pediatrics, Otology, Legal Medicine, and Electro-therapeutics.

The examination in Bacteriology takes place immediately at the close of the course in that study.

The examination in Obstetrics is optional to students of the Middle year.

Students are eligible for their examinations as follows: those of the Freshman year at the end of first year of attendance; those of the Middle year at the close of the second year's course, provided they have passed a majority of the Freshman examinations; those of the Senior year at the close of the third year's course, provided they have passed all of the Freshman examinations, and a majority of those of the Middle year.

# Requirements.

## FOR ADMISSION.

### To the Freshman Class.

(1) An English composition of not less than 200 words.

(2) The translation of easy Latin prose, or evidence of a familiarity with the derivation of medical terms, and medical and pharmaceutical terminology.

(3) Higher arithmetic including decimal and vulgar fractions and percentages.

(4) Elementary Physics. An acquaintance with the subject as treated in Avery's or Gage's work.

Students who fail in not more than two of these examinations may be enrolled as conditioned and will be required to make up the deficiency during the session, before they can be enrolled as students in regular standing.

**Exceptions.**—No entrance examination is required of matriculates or graduates of medical, pharmaceutical, or dental colleges requiring a similar entrance examination, nor of matriculates or graduates of reputable colleges of literature, science, and the arts, nor of graduates of high or state normal schools or of institutions of similar grade, nor of students holding teachers' certificates. To save delay students are requested to bring their diplomas and certificates with them.

### To the Middle Class.

Students of other accredited medical schools who have passed a majority of the examinations of the Freshman Year, which include Anatomy, Physiology, General Chemistry, Histology and Hygiene may be admitted to the Middle class.

Students of dental or pharmaceutical colleges whose standard of instruction is approved by the Faculty of this School, who have attended two full courses of lectures and passed the examinations of the Freshman year as above noted may be admitted to the Middle class.

### To the Senior Year.

Students of other accredited medical schools who have passed the examinations in Anatomy, Physiology, General Chemistry, Histology, and Hygiene, and a majority of the examinations of the Middle year, and graduates of accredited medical colleges, may be admitted to the Senior class.

Students must matriculate before November 1 of each year, in order to fulfil requirements of time.

## REQUIREMENTS FOR GRADUATION.

Candidates for the degree of Doctor of Medicine must fulfil the following requirements : —

They must be twenty-one years of age, and of good moral character.

They must have attended three full courses of medical lectures at some accredited medical college, the last of which at this school, and no two courses in the same year.

They must have passed all the required examinations.

They must have attended one case of obstetrics.

They must have dissected one half of the body.

# General Information.

## SESSIONS OF THE SCHOOL.

The annual course of lectures begins on the first Wednesday in October of each year, and continues until the first Wednesday in June.

The Christmas vacation (of a week) divides the course into two sessions.

There are no exercises at the school during this vacation, nor upon Thanksgiving Day, or Patriots' Day.

The course for 1895-96 will begin on Wednesday, October 2, 1895, and continue until Wednesday, June 6, 1896.

## STANDING AND CERTIFICATES.

Graduates of other regular medical schools in good standing may receive the degree of this school after attending one course of lectures and passing the examinations of the Senior year. It is understood that attendance upon a course of lectures requires actual presence at a majority of the exercises of each session.

Students who do not wish a degree will be received for any portion of the course. Any student may obtain a certificate of work done during his period of connection with the school.

## EXPENSES.

### First Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Demonstrator fee | 5.00 |
| Laboratory fee | 5.00 |
| General lecture ticket | 90.00 |

### Second Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Laboratory fee | 5.00 |
| General lecture ticket | 90.00 |

### Third Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| General lecture ticket | 90.00 |
| Graduation fee | 30.00 |
| Ticket admitting to the three years' lectures (when paid in advance) | 250.00 |
| Instruction in a single branch | 40.00 |
| Graduates of other schools | 50.00 |
| Dissecting material | At cost. |

The expenses of living in Boston vary according to the habits and desires of students, and need not exceed those in small cities and villages. Good board, including room, fire, and light, can be obtained near the school at from $4 to $7 per week. Near the school building are several excellent boarding places charging moderate prices. Students will not be allowed to occupy rooms in the city that are not approved by the Faculty.

Requests for the Annual Announcement and all other communications relating to the business of the school should be addressed to the Secretary, PROFESSOR CHARLES P. THAYER, M. D., 74 *Boylston Street*, *Boston*, *Mass.*

# The Suffolk Dispensary.

The Suffolk Dispensary is under the control of this school, is located at the North End where clinical material is abundant.

**President,**

HON. ALBERT C. SMITH.

**Vice-Presidents,**

HIS HONOR, NATHAN MATTHEWS, JR.
HON. THOMAS N. HART.

**Secretary,**

JOHN W. JOHNSON, M. D.

**Treasurer,**

CHARLES P. THAYER, M. D.

**Consulting Staff,**

THE MEDICAL FACULTY OF TUFTS COLLEGE.

**Attending Staff,**

E. E. THORPE, M. D.
G. F. EAMES, M. D.
W. P. DERBY, M. D.
F. W. SAWYER, M. D.
H. B. DUNHAM, M. D.
W. A. WHITE, M. D.
F. S. RADDIN, M. D.
T. F. GREENE, M. D.
C. G. CUMSTON, M. D.
C. D. EBANN, M. D.
WILLIAM WALKER, M. D.
G. A. WEBSTER, M. D.

# BROMFIELD-PEARSON HIGH SCHOOL.

# Bromfield-Pearson High School.

## BOARD OF INSTRUCTION.

ELMER H. CAPEN, D. D., President.

GARDNER C. ANTHONY, A. M., Dean,
*and Professor of Technical Drawing.*

FRANK T. DANIELS, A. M. B.,
*Instructor in Drawing.*

FRANK G. WREN, A. B.,
*Instructor in Mathematics.*

CHARLES ST. CLAIR WADE, A. M.,
*Instructor in French.*

GEORGE H. FURBISH,
*Instructor in Woodwork and Foundry Work.*

—— ——,
*Teacher of Forging.*

## STUDENTS.

| | |
|---|---|
| Chapman, William W. | *Providence, R. I.* |
| Forster, William H. | *Erie, Penn.* |
| Hawes, Clifford | *Magnolia, Ill.* |
| Larkin, Frank P. | *Westerly, R. I.* |
| Massie, Walter W. | *Providence, R. I.* |
| Norris, Charles H. | *New Britain, Conn.* |
| Sweet, Morton S. | *North Uxbridge, Mass.* |

The instruction in drawing and shop-work is also given to all engineering students of Tufts College.

# Courses of Study.

Two courses are open to students of this school: a preparatory course of one year for such as may be qualified by previous education and maturity of mind to fit for any of the Engineering Courses of Tufts College in one year; and a special course in Engineering for those who may devote but two years to their studies, and desire the essentials of an engineering education presented in a concise and practical manner, to include elementary mathematics, mechanics, and technical drafting.

## ADVANTAGES OF THE SCHOOL.

Students may prepare for the Engineering Department of the College in less time than by the ordinary fitting school, as it is possible to take all the mathematics of a high-school course in one year, beside the necessary preparation in language.

Students who pursue the preparatory course and complete the work satisfactorily will be admitted to the College on certificate.

Save in the elementary instruction in mathematics and English, the courses pursued are in most respects identical with those of the College.

Students who are partially prepared to enter the College may pursue advanced work in anticipation of their engineering studies, and thus shorten their College course.

Students who may pursue the two years' course and later decide to enter the College will receive full credit by the College for all work satisfactorily performed which may be equivalent to that required in the Engineering Department.

The association with college work and college men places the student in better position to pursue his advanced studies.

The Gymnasium, Library, and lecture courses of the College are open to students of the school.

The mechanical equipment of the school is such as to afford exceptional opportunities for pursuing the practical courses in carpentry, moulding, pattern-making, forging, and machine work.

## SUMMARY OF COURSES.

### Preparatory.

Academic Algebra, Plane Geometry, Solid Geometry, French, English, Freehand Drawing, Mechanical Drawing. Trigonometry and Shop Work, *Elective.*

### Special Engineering.

**First Year.** — Academic Algebra, Plane Geometry, Solid Geometry, Descriptive Geometry, Trigonometry, Mechanics, English, Freehand Drawing, Mechanical Drawing. Shop Work, *Elective.*

**Second Year.** — Advanced Algebra, Spherical Geometry, Analytical Geometry, Calculus, Applied Mechanics, Steam, Kinematics, Machine Drawing and Design. Shop Work, Physics, and Chemistry, *Elective.*

## THE FIRST YEAR.

ALGEBRA is pursued during the first three quarters, and includes quadratics, radicals, arithmetical and geometrical progression, together with the binomial theorem for positive exponents.

GEOMETRY is begun during the first quarter and continued throughout the year. The course includes plane and solid geometry, omitting spherical.

PLANE TRIGONOMETRY is studied during the fourth quarter. This may be omitted by those preparing for College.

ELEMENTARY MECHANICS is pursued during the last half-year by the special engineering students.

English Grammar and Composition is pursued throughout the year.

French for the entire year is required of those who are preparing for a College course. Special students may elect.

Drawing (Freehand) is pursued for the first two quarters, but may be omitted by those fitting for College.

Drawing (Technical) includes the use of instruments, geometrical problems, elementary problems in projection (orthographic and isometric), tracing, blue printing, etc. Both this and the course in Freehand are identical with the College course in drawing, and all or a part may be omitted by students fitting for College.

Descriptive Geometry may be taken by such students as are sufficiently prepared to enter the College class. This is pursued during the third and fourth quarters, and is required of those taking the two years' course.

Shop Work is elective, and may be taken at any time when it does not interfere with required work.

## THE SECOND YEAR.

This part of the course is intended only for those who do not enter the Engineering Department of the College. Students will, however, be admitted to such College classes as they may be fitted for.

Advanced Algebra and Spherical Geometry are pursued during the first two quarters with the College classes.

Analytical Geometry is taken during the first two quarters.

Calculus (Differential and Integral) is studied during the third and fourth quarters. This course is elementary, and designed to give the student such a knowledge of the practical use of the science as shall enable him to read, in an intelligent manner, books involving its use.

APPLIED MECHANICS is pursued for one half-year, and the subjects assigned for design are such as to afford a practical application of the theory.

STEAM ENGINE. A brief course in the theory of steam precedes the study of boilers and engines, as presented in the problems for design. The application of the indicator and the study of diagrams is an important feature of this course.

DRAWING. At the beginning of the year the student is supposed to be familiar with elementary machine drawing, and more time is now taken to consider the technicalities of shop practice. To this end the work is conducted as it would be in the drafting room of a shop, the instructor becoming the chief draftsman.

KINEMATICS. Under this head, the subjects of cams, gearing, links, etc., are treated, and much stress is laid on the practical application of the same.

During the second year the student may elect either Physics or Chemistry. These subjects are to be pursued with the College classes, and will include the lectures, recitations, and laboratory work required in the Engineering department.

# General Information.

## REQUIREMENTS FOR ADMISSION.

Students will be required to satisfy the instructor in charge of their ability to pursue the studies which they may elect. This may be done by certificate from school previously attended, or by examination, oral or written, as may be deemed necessary.

In the matter of examination, either for entrance or for advanced standing, the students are considered individually rather than collectively, in order to give the instructor the fullest knowledge of the standing of the student, and enable the latter to take such a place in the school as shall best fit him for his future work.

## CERTIFICATES.

Certificates of proficiency are given the special engineering students who shall complete either of the courses comprised in one year. These certificates state what subjects have been completed according to the requirements of the institution. No diploma is given or degree conferred.

## TUITION.

Tuition is $30 per quarter, payable in advance, and no part of the tuition fee will be refunded to pupils who for any reason withdraw from the school before the close of the term for which the fee is paid.

Full information concerning the courses and other matters pertaining to the school may be obtained on application to Gardner C. Anthony, Dean of the Bromfield-Pearson School, *Tufts College*, *Mass.*

# Thirty-Eighth Annual Commencement.

JUNE 20, 1894.

## DEGREES CONFERRED.

### Honorary Degrees.

### Ph. D.

ELIHU THOMPSON.

### D. D.

WILLIAM ERASTUS GIBBS.
THOMAS ALLIN.

### LL. D.

JARVIS SHERMAN WIGHT, M. D.

### Degrees in Course.

### A. B.

HERBERT ELMON BENTON (*with Honors in German and History*).
JAMES STUART EASTWOOD.
FRED EUGENE GARDNER (*extra ordinem*).
BLANCHARD FOSSETT HICKS.
FRED CROSBY HODGDON (*with Honors in Mathematics*).
VIRGIL LOUIS LEIGHTON (*with Honors in Biology*).
WILLARD STANTON SMALL.
CHARLES JOSEPH SNOW (*with Honorable Mention in Greek*).
CHARLES CRAWFORD STROUD (*with Honorable Mention in History*).
CHARLES ST. CLAIR WADE (*with Honors in Greek and Latin*).
FRED STORER WALKER (*with Honorable Mention in English Literature*).
FRED HENRY WEBSTER (*with Honors in Biology*).
THOMAS WHITTEMORE.
FRANK GEORGE WREN (*with Honors in Mathematics*).

### Ph. B.

FRED DAYTON LAMBERT (*with Honorable Mention in Biology*).

### B. C. E.

ORVILLE JOPHANUS WHITNEY.

### B. E. E.

EDWARD PATRICK BYRNE.
CARL VOLTAIRE HATHAWAY.
ISAAC BURRILL HERSEY.
JOHN OLIN McDAVITT.
JOHN PURINGTON MALLETT (*with Honorable Mention in Electricity*).
ADELBERT HARLAND MORRISON (*with Honorable Mention in Electricity*).
ROBERT HENRY MORSE.
FREDERICK HOWARD PEMBER (*with Honors in Electricity*).
RUFUS CURTIS READ.
SAMUEL ALBERT SPALDING.
ALBERT POTTER WILLS (*with Honors in Electricity*).
EDWIN HANSCOM WRIGHT (*with Honorable Mention in Electricity*).

### B. D.

ALLEN BROWN.
AUGUSTINE NORWOOD FOSTER.
ARTHUR WILDER GROSE, A. B.
HERVEY HASTINGS HOYT.
GEORGE EDWARD LEIGHTON.
IRA DANIEL MORRISON.
FREDERIC WILLIAM PERKINS, A.B.
OMER GENERE PETRIE.

### M. D.

LeGRAND BLAKE.
MAY CHADBOURNE.
JAMES COLBY DORR CLARKE.
ROSA FLETCHER.
HENRY BRISTOL DUNHAM.
CHARLES DELETANG EBANN.
EUDORA MEADE FAXON.
JEFF CUSHING GALLISON.
THOMAS FRANCIS GREENE.
GEORGE EDDY HUNT.
CHARLES DAVISON KNOWLTON.

JONATHAN HARDING MEIGS.
ALICE ELIZABETH PALMER.
RICHARD MILLS PEARCE.
HELEN RABINOVICH.
JAMES McDONALD ROY.
MARY EUPHRASIA SMITH.
ELLA GERTRUDE STONE.
EDWARD ELIPHALET THORPE.
WILLIAM WALKER.
WILLIAM ALLEN WHITE.
ELLA ROSALIND WYLIE.

### A. M.

ARTHUR WILDER GROSE.
CHARLES AUGUSTUS HATHAWAY.
MINNIE ADELAIDE NICHOLS.
FREDERIC WILLIAM PERKINS.
CHARLES ROLLIN TUCKER.
CHARLES ST. CLAIR WADE.

### E. E.

ROBERT CALTHROP BROWN.
ALBERT STETSON.

---

## AWARDS OF PRIZES, 1893-94.

### Goddard Prize in Latin.

Mary Frances Goddard.

### Goddard Prize in Mathematics.

Winthrop Warner White.

### Greenwood Prize Scholarship in Oratory.

Herbert Elmon Benton.

### Rhetorical Prizes.

Thomas Whittemore and Herbert Elmon Benton, of the Senior Class; Charles Dow Clark and Edward Channing Craig of the Junior Class; Blanche Harwood Hill and Reignold Kent Marvin of the Sophomore Class.

### Greenwood Prizes in Oratory in the Divinity School.

CURTIS HOYT DICKINS, CHARLES MERRILL WARD, and TOM ROSCOE.

### Perkins Prizes for Extemporaneous Preaching in the Divinity School.

FREDERICK WILLIAM PERKINS and IRA DANIEL MORRISON.

### Entrance Examination Prizes, 1894–95.

MALCOLM CAMPBELL ANDERSON and WILLIAM RICHARD RANSOM.

# CATALOGUE

OF

# TUFTS COLLEGE

1895-96

BOSTON:
ALFRED MUDGE & SON, PRINTERS.
No. 24 FRANKLIN STREET.
1895.

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# Calendar.

## 1895.

| | | |
|---|---|---|
| SEPT. | 19. | College year begins (all departments except the Medical School), Thursday morning. |
| SEPT. | 22. | Russell Lecture, Sunday, 3 P. M. |
| OCT. | 1. | Examination for Admission to the Medical School. |
| OCT. | 2. | Medical School Year began. |
| NOV. | 4. | Fall Examinations of Medical School began. |
| DEC. | 18. | Christmas recess begins, Wednesday at 1 P. M. |

## 1896.

| | | |
|---|---|---|
| JAN. | 1. | Christmas recess ends, Wednesday evening. |
| FEB. | 8. | End of first half-year, Saturday. Plans of study for the second half-year must be reported before noon of this day. |
| FEB. | 10. | Second half-year begins Monday. |
| MARCH | 28. | Spring recess begins, Saturday at 1 P. M. |
| APRIL | 5. | Spring recess ends, Sunday evening. |
| MAY | 26. | Prize Reading in the College of Letters, Tuesday. |
| JUNE | 2. | Prize Reading in the Divinity School, Tuesday. |
| JUNE | 12. | Class Day, Friday. |
| JUNE | 14. | Baccalaureate Sermon, Sunday, 3 P. M. |
| JUNE | 17. | Thirty-ninth Annual Commencement, Wednesday. |

*First Examinations for Admission to College of Letters.*

| | | |
|---|---|---|
| JUNE | 18. | Algebra, 9 to 10.30 A. M.<br>English, 10.30 A. M. to 12.30 P. M.<br>Arithmetic and Plane Geometry, 2 to 4 P. M.<br>Physics, 4 to 5 P. M. |
| JUNE | 19. | Latin and Advanced Mathematics, 9 to 11 A. M.<br>Elementary German and French, 11 A. M. to 12.30 P. M.<br>History, 2 to 4 P. M.<br>Chemistry, 4 to 5 P. M. |
| JUNE | 20. | Greek and Intermediate or Advanced German, 9 to 11 A. M.<br>Natural History (two subjects), 11 A. M. to 1 P. M. |

SUMMER VACATION, THIRTEEN WEEKS.

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*Second Examinations for Admission to College of Letters.*

| | | |
|---|---|---|
| SEPT. | 15. | Algebra, 9 to 10.30 A. M.<br>English, 10.30 A. M. to 12.30 P. M.<br>Arithmetic and Plane Geometry, 2 to 4 P. M. |
| SEPT. | 16. | Latin and Advanced Mathematics, 9 to 11 A. M.<br>Elementary German and French, 11 A. M. to 12.30 P. M.<br>History, 2 to 4 P. M. |
| SEPT. | 17. | Greek and Intermediate or Advanced German, 9 to 11 A. M.<br>Natural History (two subjects), 11 A. M. to 1 P. M.<br>Physics, 2 to 3 P. M.<br>Chemistry, 3 to 4 P. M. |

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| | | |
|---|---|---|
| SEPT. | 16. | Examination for Admission to the Divinity School in Miner Hall, beginning at 9 A. M. |
| SEPT. | 17. | College Year begins, Thursday morning.<br>Registration of all students at Secretary's office.<br>Major departments and plans of study for the first half-year must be reported before noon of this day. |
| SEPT. | 19. | Regular College exercises begin. |
| SEPT. | 20. | Russell Lecture, Sunday 3 P. M. |
| DEC. | 23. | Christmas recess begins, Wednesday evening. |

## 1897.

| | | |
|---|---|---|
| JAN. | 6. | Christmas recess ends, Wednesday evening. |

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TUFTS COLLEGE is situated at College Hill, four miles from Boston, on the Lowell division of the Boston & Maine Railroad. The post-office address is — TUFTS COLLEGE, MASS.

# Historical Sketch.

TUFTS COLLEGE was founded under a charter granted April 21, 1852. Like so many of the endowed colleges of the country, it owed its beginnings primarily to the need of an educated ministry, felt by an important body of Christians. Its work is, however, non-sectarian, a fact amply shown by the membership of its Faculty and student body. The aim of its instruction has been always the pursuit of truth.

The movement resulting in the founding of the college was set on foot in 1847, through the efforts of the Rev. Thomas J. Sawyer, of New York, the Rev. Hosea Ballou, 2d, of Medford, and the Rev. Thomas Whittemore, of Cambridgeport. After much consideration the work of raising a fund of one hundred thousand dollars for a foundation was undertaken, under the direction of the Rev. Otis A. Skinner, of Boston. About sixty thousand dollars was obtained in money. Sylvanus Packard gave his bond for twenty thousand dollars additional, and Charles Tufts gave twenty acres of land on Walnut Hill, embracing the present site of the College. Mr. Tufts announced his intention of increasing his gift of land to more than one hundred acres, and thus became the largest benefactor of the young institution, which accordingly received his name. Mr. Packard was a Boston merchant, who from the beginning made the College a peculiar care. Dying, he bequeathed to it his entire fortune, this being the largest gift it has yet received from a single person. Among other benefactors deserving mention, associated with those who may be styled the founders of the College, were Oliver Dean, who gave it ninety thousand dollars, and Thomas A. Goddard, whose gifts, though unobtrusive, were constant, and whose widow has continued the generosity of her husband. Dr. William J. Walker came soon after, with gifts and bequests amounting to nearly three hundred thousand dollars.

Students were first formally admitted in 1855. The only building at that time was the main College building, now known as Ballou Hall. The next building to be erected was a small brick dormitory, now the Library building. The large dormitory known as East Hall was the next addition to the group, and in 1872 West Hall was opened to students. It was ten years before building operations were renewed by the College. The original Faculty numbered five. The first class, of three members, graduated in 1857.

At the outset, provision was made for a course of study leading to the degree of Bachelor of Arts. The only feature of its work peculiar to Tufts College in these years of its beginnings was the attention given to the study of history. The first President of the College, the Rev. Hosea Ballou, 2d, D. D., was likewise Professor of History and of Intellectual Philosophy, and gave instruction in history remarkable alike for its quantity and quality, at a time when the study was hardly recognized in American colleges. Four hours a week for three years was the time assigned to this subject in the curriculum of Tufts College, until the death of President Ballou, in 1861, when, there being no one to take up the work, it dropped from the course.

Dr. Ballou was succeeded in the presidency by the Rev. Alonzo Ames Miner, D. D., LL. D., who was inaugurated in 1862, and continued in office until 1875, resigning in February of that year.

In March, 1875, the Rev. Elmer Hewitt Capen, D. D., was elected to the Presidency of the College, vacated by the resignation of President Miner, and he was inaugurated on the second day of June.

Some unclassified students had always been in attendance at the College, and in 1866 the degree of Bachelor of Philosophy was offered to those who should pursue a prescribed course of two years, the object being to provide for those who had been prepared only in English subjects. This course was maintained until 1875, when it was changed to a course of four years. The requirements for admission were then made the same as for the regular course, except that Greek as a condition of entrance was omitted, and an amount of work in French or German, considerably less than its equivalent, was substituted.

The will of Mr. Packard required that a professor of Christian Theology should be maintained from the income of funds bequeathed by him. The Rev. Thomas J. Sawyer, D. D., was elected Packard Professor in 1869. This was the beginning of the Divinity School. In 1882 the school had developed so that its Faculty received a definite organization and Dr. Sawyer became the first Dean, retaining the office until his retirement as Packard Professor Emeritus in 1892. He was succeeded by the present Dean, the Rev. Charles H. Leonard, D. D. From the erection of West Hall until the completion of the separate buildings of the school, the western side of West Hall was occupied by the Divinity School. In 1892, by the gift of Ex-President Miner, the school was provided with a convenient and handsome building, Miner Hall, containing the library, class-rooms, chapel, and reception room; and at the same time, largely through the efforts of the Dean of the School, the money was obtained to build Paige Hall, a dormitory for students of the Divinity School.

The Engineering courses were begun in 1869 with a department of Civil Engineering. The great development of electrical science was promptly recognized, and a department of Electrical Engineering was opened to students in 1882, a professorship in the subject being established in 1890. This side of the college work had a very rapid development, and in 1894 the field was broadened by the addition of a course in Mechanical Engineering. In these courses an effort has always been made to give thorough practical training. The will of the late Henry B. Pearson, founding the Bromfield-Pearson School, and putting it in the hands of the Trustees of Tufts College to administer, provided a thoroughly equipped building for technical instruction, of great value in the drawing, pattern-making, machine, and forge work, so important to the engineer in any branch. The Bromfield-Pearson building was completed in the fall of 1894.

In 1883 the late Phineas T. Barnum gave fifty-five thousand dollars for the establishment of the Barnum Museum of Natural History, and by his last will he bequeathed forty thousand dollars more. The main Museum building was completed in 1884. The west wing, containing the new biological laboratories, was erected in 1894. The years 1882 and 1883 saw also the completion of the Goddard Chapel, a monument of architectural beauty, given by Mrs. Mary T. Goddard as a memorial of her husband, the first treasurer of the college, and of the Goddard Gymnasium, a gift from the same source. Dean Hall, a new dormitory, made necessary by the growth of the college, was erected in 1887 from funds bequeathed by the late Oliver Dean.

During the past college year two new buildings were opened in addition to the west wing of the Barnum Museum. These were the Chemical Building and a building containing students' rooms, a dining hall and the post-office.

The development of the college in its internal life has, however, been the notable fact of the last few years, of which the external changes have been the indications. In 1891 a new course of study, leading to the degree of Bachelor of Arts, was offered for the first time, with an entrance requirement, believed to be fully the equivalent of the Greek, in two modern languages. This was one important step taken by the college towards the broadening of its opportunities, but it soon proved to be insufficient. There had been a steady growth for many years in the amount of work done and in the number of departments of learning represented. Instead of the five members of the corps of instruction at the opening of the college in 1855, the catalogue of 1893-4 showed a body of active instructors, exclusive of the Divinity and Medical Schools, numbering twenty-seven, and offering subjects aggregating 113 and divided into twenty-two departments, exclusive of the Engineering Courses proper. Two new departments had been instituted in 1892, in response to the tendencies of educational development — Biology and History. In the fall of 1893 it seemed possible to take another step and to put in operation the present plan of work, which is believed to be an approach to a rational coordination and connection of the college and university systems. The beneficial results, in the growth of a more earnest and scholarly spirit, have already been felt.

In this revision of requirements provision was made for admission of graduates of good English high schools to courses leading to the degree of Bachelor of Philosophy. This opportunity has been broadened this year by the opening of four-year courses in Biology, Chemistry, General Science, and Medical Preparatory work, these courses leading to the degree of Bachelor of Science, and being accessible to graduates of all good high schools. These new courses open broad opportunities to graduates of schools, not fitting especially for college, to secure a thorough college training. Bachelors of Philosophy may, if they desire, go on to the attainment of the degree of Bachelor of Arts.

In response to a pressing demand the college was, in the summer of 1892, opened to women on the same terms as to men. Nine women registered in all departments in that year. In 1894 the catalogue showed a registration of 72 women. In the fall of 1894 there was opened for the accommodation of women students Metcalf Hall, the gift of Mr. Albert Metcalf, of Newton. The admission of women to the college was followed a year later by the opening of the Tufts College Medical School. The school has graduated two classes and has enjoyed substantial growth in the number of its students and in its facilities for work.

# THE COLLEGE CHARTER.

SECTION 1. B. B. Mussey, Timothy Cotting, Richard Frothingham, Jr., their associates and successors, are hereby constituted a body corporate by the name of the Trustees of Tufts College, in Medford, and they and their successors, and such as shall be duly elected members of said corporation, shall be and remain a body corporate by that name forever. And for the orderly conducting of the business of said corporation, the said Trustees shall have power and authority, from time to time, as occasion may require, to elect a President, Vice-President, Secretary, and Treasurer, and such other officers of said corporation as may be found necessary, and to declare the duties and tenures of their respective offices; and also to remove any Trustee from the same corporation, when, in their judgment, he shall be rendered incapable, by age or otherwise, of discharging the duties of his office, or shall neglect or refuse to perform the same; and also, from time to time, to elect new members of the said corporation; provided, nevertheless, that the number of members shall never be greater than thirty.

SECTION 2. The said corporation shall have full power and authority to determine at what times and places their meetings shall be holden, and the manner of notifying the Trustees to convene at such meetings, and also, from time to time, to elect a President of said College, and such professors, tutors, instructors, and other officers of the said College, as they shall judge most for the interest thereof, and to determine the duties, salaries, emoluments, responsibilities, and tenures of their several offices. And the said corporation are further empowered to purchase or erect, and keep in repair, such houses and other buildings as they shall judge necessary for the said College; and also to make and ordain, as occasion may require, reasonable rules, orders, and by-laws, not repugnant to the Constitution and Laws of this Commonwealth, with reasonable penalties for the good government of the said College, and for the regulation of their own body, and also to determine and regulate the course of instruction in said College, and to confer such degrees as are usually conferred by colleges in New England; provided, nevertheless, that no corporate business shall be transacted at any meeting unless one third, at least, of the Trustees are present.

SECTION 3. The said corporation may have a common seal, which they may alter or renew at their pleasure, and all deeds sealed with the seal of said corporation, and signed by their order, shall, when made in their corporate name, be considered in law as the deeds of said corporation; and said corporation may sue and be sued in all actions, real, personal, or mixed: and may prosecute the same to final judgment and execution by the name of the Trustees of Tufts College; and said corporation shall be capable of taking and holding in fee simple, or any less estate, by gift, grant, bequest, devise, or otherwise, any lands, tenements, or other estate, real or personal; provided, that the clear annual income of the same shall not exceed two hundred thousand dollars.

SECTION 4. The clear rents and profits of all the estate, real and personal, of which the said corporation shall be seized and possessed, shall be appropriated to the endowment of said College in such manner as shall most effectually promote virtue and piety and learning in such of the languages, and of the liberal and useful arts and sciences, as shall be recommended from time to time by the said corporation, they conforming to the will of any donor or donors in the application of any estate which may be given, devised, or bequeathed, for any particular object connected with the College.

SECTION 5. No instructor in said College shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges, honors, or degrees of said College, on account of the religious opinions he may entertain.

SECTION 6. The Legislature of this Commonwealth may grant any further powers to, or alter, limit, annul, or restrain, any of the powers vested by this act in the said corporation, as shall be found necessary to promote the best interests of the said College, and more especially may appoint and establish overseers or visitors of the said College, with all necessary powers for the better aid, preservation, and government thereof.

SECTION 7. The granting of this Charter shall never be considered as any pledge on the part of the Government that pecuniary aid shall hereafter be granted to the College.

# REGISTER

OF

# TUFTS COLLEGE

1895-96

# Trustees.

| | |
|---|---|
| JOHN D. W. JOY | Boston. |
| LUCIUS R. PAIGE, D. D. | Cambridge. |
| TIMOTHY T. SAWYER | Boston. |
| NEWTON TALBOT | Boston. |
| ELMER H. CAPEN, D. D. | Somerville. |
| CHARLES S. FOBES, A. M. | Portland, Maine. |
| HOSEA M. KNOWLTON, A. B. | New Bedford. |
| THOMAS H. ARMSTRONG, A. M. | Waltham. |
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| J. COLEMAN ADAMS, D. D. | Brooklyn, N. Y. |
| CHARLES WHITTIER | Boston. |
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| ARTHUR E. DENISON, A. B. | Cambridge. |
| HENRY D. WILLIAMS, A. M. | Boston. |
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| WALTER E. PARKER | Lawrence. |
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| CHARLES E. MORRISON | Boston. |
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*Instructor in Gynæcology and Assistant in Obstetrics.*

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*Instructor in Quantitative Analysis.* Bellevue Avenue.

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*Assistant in Gynæcology.*

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*Assistant in Materia Medica.*

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*Assistant in Electrical Engineering.*

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*Assistant in Organic Chemistry.*

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*Assistant in Qualitative Analysis and Assaying.*

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*Lecturer on Histology.*

### Divinity School.

HENRY I. CUSHMAN, D. D., Providence, R. I.
*Lecturer on Methods of Biblical Study.*

JOSEPH K. MASON, D. D., Buffalo, N. Y.
*Lecturer on Preachers and Preaching.*

FREDERIC W. HAMILTON, A. M., Roxbury.
*Lecturer on Christian Economics.*

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VIRGIL L. LEIGHTON, Dean Hall.
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*Ph. B.*, 1894. *Biology. Miner Fellow in Natural History.*

WINSLOW, GUY MONROE . . *Barton Landing, Vt.* 105 Porter St., Somerville.
*A. B.* 1895. *Biology. Olmstead Fellow in Natural History.*

### Students.

Edwards, John Williams . . *Delaware, O.* . . . West Hall, 20.
*B.S., Ohio Wesleyan Univ.*, 1895. *Chemistry. Assistant in General Chemistry.*

Higbee, Florence E. Johnson, *Wooster, O.* . . . . . Cor. Capen St. and Bellevue Ave.
*Ph. B., Wooster Univ.*, 1887. *Chemistry.*

Leighton, Virgil Louis . . . *West Falmouth, Me.* . . Dean Hall, 9.
*A. B., Tufts*, 1894; *A. M., University of Kansas*, 1895. *Chemistry. Assistant in Qualitative Analysis and Assaying.*

Smith, Orren Henry . . . *Williamstown, Vt.* . . . West Hall, 12.
*English Literature.*

Whitehorne, William Risby . *W. Somerville* . . . 14 Elmwood St.
*A. B.*, 1895. *Chemistry.*

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In the following list the course pursued by each student is indicated by the italic letters immediately following the name. The abbreviations are as follows: Courses leading to the degree of A. B., *a b;* to the degree of Ph. B., *ph.;* to the degree of S. B., — in Civil Engineering, *c e;* in Electrical Engineering, *e e;* in Mechanical Engineering, *m e;* and in the first two years of the Engineering Courses, before the differentiation of studies, *e;* to the degree of S. B., through the Science Courses, — in General Science, *sc;* in Biology, *bi;* in Chemistry, *ch;* and Medical Preparatory, *m p.*

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* The right-hand column contains the college residence of every student having such residence, the neighboring cities of Somerville and Medford being thus included. The middle column records the home address.

## Senior Class.

| | | |
|---|---|---|
| Bailey, Mabel Prescott, *a b* | *Methuen* | 114 Professors Row. |
| Barnard, Percival Gates, *a b*, | *Lowell* | West Hall, 29. |
| Belcher, Walter Hermon, *a b*, | *W. Medford* | East Hall, 29. |
| Brothers, George Arthur, *e e*, | *Lowell* | West Hall, 26. |
| Cheever, Ralph Holbrook, *a b*, | *Portsmouth, N. H.* | Mid. Hall, 10. |
| Congdon, Joseph, *a b* | *Clarendon, Vt.* | Δ Υ House. |
| Dillon, David Francis, *a b* | *Palmer* | West Hall, 17. |
| Fickett, Edward Wyman, *a b*, | *Spencer* | Δ Υ House. |
| Goddard, Mary Frances, *a b*, | *W. Somerville* | 46 Newbury St. |
| Hall, Clifford Foster, *a b* | *Nashua, N. H.* | West Hall, 16½. |
| Hayes, Ethel Munroe, *a b* | *Somerville* | 252 Medford St. |
| Hayward, Daniel Baxter, *a b*, | *E. Braintree* | Θ Δ Χ House. |
| Hicks, Frank Files, *c e* | *W. Somerville* | 8 Lester Terrace. |
| Holbrook, Henry William, *a b*, | *Palmer* | West Hall, 24. |
| Ives, John Nash, *e e* | *Dorchester* | Δ Τ Δ House. |
| Johnson, Sidney Breed, *a b* | *Lynn* | East Hall, 24. |
| Jordan, Charles Gilbert, *a b* | *E. Braintree* | West Hall, 28. |
| Larrabee, Frank Philip, *a b* | *Portland, Me.* | West Hall, 1. |
| Maguire, George Francis, *a b*, | *Rockland* | East Hall, 19. |
| Marvin, Reignold Kent, *a b*, | *Roxbury* | Θ Δ Χ House. |
| Meacom, Gertrude Holbrooke, *a b*, | 82 *Bellingham St., Chelsea.* | |
| Merrill, Meldon Humphrey, *e e*, | *Yarmouth, Me.* | East Hall, 14. |
| Ohata, Konosuke, *e e* | *Ibaraki-ken, Japan*, | East Hall, 34. |
| O'Neil, William Roe, *a b* | *Attleboro* | East Hall, 18. |
| Perry, Leslie Lawrence, *e e*, | *Chester, Vt.* | Δ Υ House. |
| Pierce, Guy Clifford, *e e* | *Lowell* | West Hall, 25. |
| Polk, Cora Alma, *a b* | *Towanda, Pa.* | 158 Boston Ave., Medford. |
| Sabine, Edward Dana, *c e* | *Malden* | West Hall, 27. |
| Sampson, Edwin Russell, *a b*, | *N. Weymouth* | West Hall, 2. |
| Smith, Orren Henry, *a b* | *Williamstown, Vt.* | West Hall, 12. |
| Smith, Warner Daniel, *e e* | *Marshfield, Vt.* | Mid. Hall, 12. |
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| Thurston, Arthur, *e e* | *Haverhill* | West Hall, 26. |
| Tifft, Marie Louise, *a b* | *Somerville* | 7 Lee St. |
| Whiton, Charles Edward, *e e*, | *Greenwood* | West Hall, 2. |

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| | | |
|---|---|---|
| Barden, Henrie Clark, *e e* | *No. Attleboro* | East Hall, 21. |
| Blanchard, Lem Gale, *a b* | *Tufts College* | East Hall, 27. |
| Brown, Helen Elizabeth, *a b*, | *Waltham* | Metcalf Hall, 4. |

| | | |
|---|---|---|
| Browning, Charles Augustus, *e e*, | *Somerville* | East Hall, 21. |
| Butterfield, John McArthur, *a b*, | *Revere* | East Hall, 20. |
| Corridan, Eugene Francis, *a b*, | *Weymouth* | East Hall, 19. |
| Davis, Horace Amos, *ph* | *Dorchester* | Θ Δ Χ House. |
| Day, John Boynton Wilson, *a b*, | *Charlestown* | West Hall, 3. |
| Dyer, Florence Gertrude, *a b*, | *Medford* | 9 Everett St. |
| Edmands, John Stetson, *c e*, | *Somerville* | 86 Avon St. |
| Fenton, Robert Hall, *c e* | *Willimantic, Conn.* | Δ Υ House. |
| Fickett, Mary Grace, *a b* | *Spencer* | Metcalf Hall, 14. |
| Gale, Frank Randall, *a b* | *Barre, Vt.* | West Hall, 16. |
| Garcelon, Herbert Irving, *e e*, | *W. Somerville* | East Hall, 21. |
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| Graves, Charles Brown, *e* | *Marblehead* | West Hall, 13. |
| Green, Charles Boden, *c e* | *Lynn* | Dean Hall, 12. |
| Healey, Rolla Edwin, *e e* | *Claremont, N. H.* | Δ Τ Δ House. |
| Hewitt, Ernest John, *a b* | *So. Royalton, Vt.*, | West Hall, 3. |
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| White, Winthrop Warner, *a b*, | *Medford* | Dean Hall, 13. |
| Williams, Franklin Bates, *a b*, | *Roxbury* | Dean Hall, 7. |
| Wyman, Walter Scott, *e e* | *Oakland, Me.* | Δ Υ House. |

## Sophomore Class.

| | | |
|---|---|---|
| Ahern, George Edward, *e* | *Arlington* | Middle Hall, 5. |
| Anderson, Malcolm Campbell, *a b*, | *W. Somerville* | 18 Farragut Ave. |
| Andrews, Herbert Woodbury, *e*, | *Lynn* | East Hall, 11. |
| Arnold, John Emerson, *a b* | *Braintree* | East Hall, 5. |
| Avery, Elwood, *a b* | *Everett* | Mid. Hall, 5. |

| | | |
|---|---|---|
| Bancroft, Irving Reed, *ph* | *Woburn* | West Hall, 22. |
| Bartlett, Ethel Townsend, *ph*, | *Somerville* | 113 Highland Ave. |
| Boomer, Perley Eugene, *a b*, | *Medford* | Mid. Hall, 5. |
| Buck, Lula Adine Howe, *a b*, | *Medford* | 158 Boston Ave. |
| Burbank, Ralph Lyman, *ch* | *Medford* | East Hall, 32. |
| Capen, Samuel Paul, *a b* | *Tufts College* | 8 Professors Row. |
| Clark, Warren Stewart, *e* | *St. Albans, Vt.* | West Hall, 7. |
| Clayton, Osro Randall, *sc* | *Weston, Vt.* | Δ Υ House. |
| Cousens, John Albert, *a b* | *Brookline* | Δ Τ Δ House. |
| Crowley, Daniel Francis, *c e*, | *Medford* | East Hall, 21. |
| Cummings, Morton Everett, *e*, | *Medford* | East Hall, 32. |
| Daniels, George Emory, *a b*, | *Franklin* | East Hall, 24. |
| Donaldson, James Frank, *a b*, | *Salem* | West Hall, 28. |
| Evans, Mary Eliza, *a b* | 16 *Wright St., Stoneham.* | |
| Flint, Marion Lenore, *a b* | *Spring St., Bedford.* | |
| French, Edmund Merritt, *e*, | *W. Hingham* | East Hall, 26. |
| Gifford, Fannie Crocker, *a b*, | *Provincetown* | Metcalf Hall, 6. |
| Grant, Beatrice Alexandra, *a b*, | 29 *Pleasant St., Woburn.* | |
| Graves, Wallace Humphrey, *ch*, | *Bangor, Me.* | East Hall, 11. |
| Hammond, Roland, Jr., *a b* | *Brockton* | East Hall, 23. |
| Harwood, George Alec., *e* | *Cambridge* | Middle Hall, 10. |
| Howe, Wilson Tyler, *c e* | *E. Brookfield* | West Hall, 27. |
| Huston, Milton, *ch* | *W. Falmouth, Me.* | East Hall, 9. |
| Johnson, Edward Dunbar, *a b*, | *Methuen* | West Hall, 19. |
| Jones, Guy Edward, *e* | *Marlow, N. H.* | 7 Clarendon Ave., W. Somerville. |
| Jones, Willie Parker, *a b*, | *Stoneham* | East Hall, 20. |
| Maddocks, John Arthur, *e* | *Boothbay Harbor, Me.* | West Hall, 21. |
| May, Benjamin Dexter, *a b* | *Hudson* | Dean Hall, 11. |
| Merrill, Harriette Johnson, *a b*, | *E. Eddington, Me.* | Metcalf Hall, 11. |
| Mitchell, Josephine Lord, *a b*, | *Somerville* | 24 Thorpe Place. |
| Moore, Willis Albert, *a b* | *Melrose* | East Hall, 29. |
| Noyes, Charles Ellsworth, *ph*, | *Lisbon, N. H.* | Δ Υ House. |
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| Patterson, Walter Arthur, *e*, | *Waltham* | West Hall, 11. |
| Peirce, Frank Lincoln, *a b* | *Brimfield* | Δ Υ House. |
| Randlett, Fred Morse, *e e* | *Lawrence* | Dean Hall, 10. |
| Ransom, Clara, *a b* | *Tufts College* | 80 Professors Row. |
| Ransom, William Richard, *a b*, | *Tufts College* | 80 Professors Row. |
| Root, Martha Lane, *a b* | *East Duglass* | Metcalf Hall, 6. |
| Rowbotham, George Walter, *e*, | *Boston* | West Hall, 10. |
| Russell, James Porter, *a b* | *Farmington, Me.* | Δ Υ House. |
| Schoolfield, Frank Robert, *e*, | *Baltimore, Md.* | East Hall, 1. |
| Shaw, Edwin Adams, *e* | *W. Somerville* | 18 Bellingham St. |

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| Smith, Arthur Garfield, *a b* | *N. Tunbridge, Vt.* | East Hall, 5. |
| Stebbins, Katherine Louise, *a b*, | *W. Somerville* | 30 Day Street. |
| Sweet, Harold Edward, *a b* | *Attleboro* | Δ Υ House. |
| Titus, Anson Merrill, *e* | *W. Somerville* | Raymond Ave. |
| Tousey, Coleman, *a b* | *Tufts College* | 106 Professors Row. |
| Town, Frederick Edward, *e*, | *Washington, D. C.* | East Hall, 1. |
| Turner, Harriette Alice, *a b*, | *W. Somerville* | Mt. Pleasant Ave. |
| Welch, Walter Frederick, *a b*, | *Stoneham* | East Hall, 20. |
| Wells, Roy Titus, *e* | *Foxboro* | East Hall, 30. |
| Whitman, Walter George, *a b*, | *Norway, Me.* | East Hall, 13. |

## Freshman Class.

| | | |
|---|---|---|
| Allen, Charles Rollin, *e* | *Barre, Vt.* | West Hall, 15. |
| Andrews, Charles Masson, *sc*, | *Newtonville* | East Hall, 31. |
| Barker, Fred Percy, *e* | *Waltham* | West Hall, 11. |
| Bartlett, Lewis, *e* | *Marblehead* | East Hall, 12. |
| Bates, Henri Evans, *e* | *Marion* | East Hall, 30. |
| Bean, Charles Alvin, *a b* | *Hudson* | Dean Hall, 11. |
| Beaudry, Charles Shingleton, *e*, | *Reading* | West Hall, 1. |
| Bradbury, Fannie Eliza, *ph*, | *Milford* | Metcalf Hall, 3. |
| Brightman, Carl Gordon, *e* | *Round Pond, Me.* | East Hall, 13. |
| Buss, Arthur Stacey, *e* | *Medford* | Dean Hall, 14. |
| Butterworth, Henry David, *e*, | *Attleboro* | East Hall, 25. |
| Carleton, Grace Willis, *a b* | *Wakefield* | Metcalf Hall, 1. |
| Carpenter, Edwin King, *a b*, | *West Medford* | Dean Hall, 14. |
| Christian, Leroy Bernard, *e*, | *Auburn, Me.* | Middle Hall, 9. |
| Chubb, Thomas Briggs, *e* | *Tufts College* | Middle Hall, 11. |
| Clapp, Albert Lewis, *ch* | *Marblehead* | East Hall, 12. |
| Clough, Harry Wescott, *a b*, | *Lowell* | West Hall, 32. |
| Cogswell, Lena Rice, *a b* | *Gardner* | 20 Conwell Ave., Somerville. |
| Cousens, Kate Elizabeth, *a b*, | *Brookline* | Metcalf Hall, 12. |
| Cowan, Frank Joseph, *a b* | *Farmington, Me.* | East Hall, 33. |
| Cutler, Augustus Leon, *e* | *Wakefield* | West Hall, 5. |
| Davis, Mervin Nathaniel, *e* | *Haverhill* | Middle Hall, 7. |
| Doane, Ernest Stanley, *ph* | *Marblehead* | Dean Hall, 3. |
| Eveleth, Charles Wonson, *mp*, | *Marblehead* | West Hall, 30. |
| Flaherty, William Henry, *e*, | *Somerville* | 261 Washington St. |
| Forster, George Fleming, *a b*, | *Lawrence* | East Hall, 31. |
| Gage, Isaac Bradley, *a b* | *W. Medford* | Dean Hall, 13. |
| Giles, Fred Elmer, *e* | *Somerville* | East Hall, 10. |
| Goudey, Grace Evelyn, *a b* | 53 *Buckman Street*, | *Everett.* |
| Griffiths, Willis Wentworth, *e*, | *Medford* | Middle Hall, 13. |

| | | |
|---|---|---|
| Griswold, Fred Fay, *e* | *So. Manchester*, *Conn.* | Middle Hall, 12. |
| Hackett, Cora May, *a b* | *Wakefield* | Metcalf Hall, 1. |
| Hall, Samuel Thomas, *e* | *Medford* | Middle Hall, 13. |
| Heath, George Byron, *ph* | *Calais*, *Me.* | West Hall, 30. |
| Holmes, Albert Bourne, *e* | *Sharon* | Dean Hall, 2. |
| Holmes, Harry Emery, *e* | *Medford* | Middle Hall, 13. |
| Howe, Frank Merrill, *a b* | *So. Weymouth* | East Hall, 3. |
| Hunter, Leslie Erastus, *e* | *Essex Junction*, *Vt.* | East Hall, 2. |
| Jacobs, Frank Collins, *e* | *Franklin* | East Hall, 15. |
| Kent, Ira Rich, *a b* | *Calais*, *Vt.* | West Hall, 12. |
| Knight, Isabella Gertrude, *a b*, | *Tufts College* | 114 Professors Row. |
| Knowlton, Frank Warren, *a b*, | *New Bedford* | East Hall, 28. |
| Lane, Grace Harvey, *a b* | *W. Medford* | 66 Brooks St. |
| Lawrence, Bertha Faustina, *bi*, | *Stowe* | Metcalf Hall, 13. |
| Lewis, Florence May, *a b* | *Main St.*, *Stoneham.* | |
| Litchfield, Harry, *e* | *Fitchburg* | West Hall, 31. |
| Lovering, Frank Woods, *sc*, | *W. Medford* | Dean Hall, 13. |
| Lyons, Jerold Thomas, *a b* | 118 *Maverick St.*, *Chelsea.* | |
| Mange, John Isaac, *e* | *Kingston* | East Hall, 4. |
| Marble, Ernest Gilman, *e* | *Methuen* | West Hall, 19. |
| Marvin, Charles Remington, *ab*, | *Roxbury* | West Hall, 25. |
| Mason, William Madison, *ch*, | *Washington*, *D. C.*, | East Hall, 23. |
| Meader, Edgar Keene, *m p* | *Marblehead* | West Hall, 30. |
| Metcalf, Herbert Lester, *e* | *Franklin* | East Hall, 9. |
| Morton, George Fisher, *bi* | *Cambridge* | West Hall, 31. |
| Morton, Anna Lucy, *sc* | *Cambridge* | Metcalf Hall, 7. |
| Nichols, Arvilla Florence, *a b*, | *Somerville* | 505 Broadway. |
| Nickless, Henry Eugene, *a b*, | *Woburn* | East Hall, 2. |
| Olmsted, Elmer Sheridan | *Somerville* | East Hall, 30. |
| Perkins, Llewellyn Rood | *So. Woodstock*, *Vt.* | 80 Professors Row. |
| Philbrook, Etta Frances, *a b*, | 85 *Ferry St.*, *Everett.* | |
| Ralph, Hugh Henry, *a b* | *Brownsville*, *Vt.* | West Hall, 16. |
| Rand, Charles Henry | *Waltham* | West Hall, 14. |
| Rhind, Ernest Seymour, *ph*, | *Attleboro* | East Hall, 25. |
| Rich, Barzillai Allen, *e* | *Hingham* | East Hall, 26. |
| Rich, Edward Wellington, *a b*, | *West Acton* | East Hall, 28. |
| Richardson, Ernest Stanley, | *Danvers* | Δ Υ House. |
| Richardson, Herbert Hay, *a b*, | *Stoneham* | East Hall, 17. |
| Robinson, George Nelson | *Winchester* | East Hall, 29. |
| Sedgwick, Otis White, *ch* | *Bondsville* | West Hall, 20. |
| Shaw, Ellen Eddy, *m p* | 14 *South St.*, *Woburn.* | |
| Smith, Forster Hanson, *a b* | *Lowell* | West Hall, 32. |
| Smith, Payson, *a b* | *Portland*, *Me.* | East Hall, 27. |
| Smith, Simeon Conant, *a b* | *Provincetown* | Dean Hall, 3. |

Smith, William Boulay, Jr., *e*, *New Bedford* . . East Hall, 22.
Stowell, Jean Henry, *e* . . *Charlestown* . . . Middle Hall, 11.
Sturtevant, Morton Adams, *a b*, *Stoneham* . . . East Hall, 17.
Taylor, Elizabeth French, *a b*, *Nashua, N. H.* . 72 Professors Row.
Trow, Harris Cushman, *e* . *Kingston* . . . . East Hall, 3.
Wallace, John Eugene, *e*, *Waterloo, P. Q., Canada*, Middle Hall, 6.
Watson, Clara Eva, *a b* . . *Nashua, N. H.* . Metcalf Hall, 5.
White, Helen Ridler, *a b* . . *Pawtucket, R. I.* . Metcalf Hall, 2.
Whitney, Arthur Bryant, *a b*, *Milford* . . . . Dean Hall, 9.
Wiley, Harry Farrington, *e*, *Peabody* . . . . East Hall, 4.
Yeaton, Mary Frances, *a b* . 22 *Pond St.*, *Stoneham.*

Hill, George Bond, *a b* . . *Lowell* . . . . Dean Hall, 5.
Horton, Frederick Davis, *e* . *Pawtucket, R. I.* . West Hall, 6.
Vincent, Shelley Davis, *ph* . *Danbury, Conn.* . West Hall, 15.

## Special Students.

In the following list the Roman numeral indicates the year of attendance; the italicized department name is that of the student's major department; and the following subjects are those taken by the student for the current year. Abbreviations: Chem., Chemistry; Civ. Engin., Civil Engineering; Draw., Drawing; Elec., Electricity; Elec. Lab., Electrical Laboratory; El. Mech., Elements of Mechanism: Eng., English; Eng. Lit., English Literature; Geol., Geology; Germ., German; Hist., History; Math., Mathematics; Mech., Mechanics; Mech. Engin., Mechanical Engineering; Phil., Philosophy.

Atwood, Louise Russell . . *Medford* . . . . 4 Garden St.
III. *Eng. Lit.* Eng. 6, French 3, Phil. 2, Physics 1, Geol. 1.
Bailey, Arthur Low . . . *Methuen* . . . . 90 Curtis St.
II. *Eng. Lit.* Eng. Lit. 2, Germ. 2, French 3, Hist. 5, Phil. 1.
Bailey, Dora Albonetta . . *Somerville* . . . Highland Ave., cor. Central St.
II. *Germ.* Eng. Lit. 1, 2, Germ. 2, French 4, Phil. 2, Music 1.
Carvill, Lizzie Maud . . . *Somerville* . . . 28 Highland Ave.
I. *Germ.* Eng. 1, 2, Eng. Lit. 2, Germ. 1, Phil. 2, Chem. 1.
Chapman, William Wescott, *Providence, R. I.* . West Hall, 4.
I. *Civ. Engin.* Math. 1, 3, Civ. Eng. 1, Physics 1, Draw., Mech.
Clark, Irving Stockton . . 14 *Greenwich St.*, *Boston.*
II. *Draw.* French 2, Math. 3, Chem. 1, Physics 1, Draw.
Cummings, Maidelle Leslie . *W. Somerville* . . 48 Wallace St.
II. *French.* Eng. Lit. 3 (a), Germ. 2, French 4, Hist. 1, Music 1.

Davis, Edith Lovell . . . *Fitchburg* . . . Metcalf Hall, 7.
I. *Eng. Lit.* Eng. 1, Eng. Lit. 1, 2, French 2, Hist. 1, Math. 1.
Eaton, Mary Helen . . . 954 *Main St., N. Woburn.*
I. *Hist.* Eng. Lit. 1, 2, Germ. 2, French 1, Hist. 1, Phil. 2.
Forster, William Hayes . . *Erie, Pa.* . . . West Hall, 4.
I. *Mech. Eng.* Math. 3, Chem. 1, El. Mech., Elec., Elec. Lab., Draw.
Gould, Nina Augusta Tyler, *Warren* . . . . 101 Talbot Ave.
I. *French.* Germ. 1, 3, French 2, 3, Phil. 2.
Hilliard, Helen Jones . . . *Provincetown* . . Metcalf Hall, 2.
I. *French.* Germ. 1, French 2, Music 1.
McCall, Ella Frances Louise, 5 *Middlesex St., Woburn.*
I. *Eng. Lit.* Eng. 1, Eng. Lit. 1, 2, Germ. 1, French 2, Hist. 1.
Merritt, Grace Tilden . . . *Somerville* . . . 281 Summit Ave.
I. *Biology.* Biology 1.
Parke, Robert Hayward . . *Monson* . . . . East Hall, 6.
II. *Engin.* Work of Sophomore year, Engineering Courses.
Smith, Payson . . . . . *Portland, Me.* . . East Hall, 27.
II. *Pol. Sci.* Eng. 2, Eng. Lit. 4 (a), French 3, Latin 1, 2, Greek 5, Pol. Sci. 1.
Walker, John Meredith . . *Waltham* . . . West Hall, 11.
II. *Biol.* Eng. 2, Orat. 1, Germ. 1, Latin 2, Math. 1, Biol. 1, Chem. 1.
Wilson, May . . . . . . *Somerville* . . . 40 Vinal St.
II. *Germ.* Eng. 2, Eng. Lit. 2, Germ. 2, French 1, Phil. 1.
Worthen, Carrie Leeds . . *Melrose* . . . . Metcalf Hall, 16.
I. *Germ.* Eng. Lit. 1, 2, Germ. 3, French 1, Greek 2, Hist. 1.

## DIVINITY SCHOOL.

### Senior Class.

Blackford, Frank . . . . *El Dorado, O.* . . Paige Hall, 18.
B. S., Nat. Norm. Univ., 1892.
Dickerson, Jesse Clifford . *Detroit, Mich.* . . Paige Hall, 6.
Eddy, Frank Fay . . . . *Charlotte, Mich.* . Paige Hall, 32.
Ferguson, Frank Alvah . . *Somerville* . . . 316 Beacon St.
A. B., Bost. Univ., 1889.
Fischer, Theodore Adolph . *Meriden, Conn.* . Paige Hall, 19.
Hackett, Edward Harold . *Tufts College* . . Paige Hall, 16.
(Bangor Theological Seminary.)
Vossema, Hendrik . . . *Nuis, Holland* . . Paige Hall, 17.
(Meadville Theological School.)
Ward, Charles Merrill . . *Brattleboro, Vt.* . Heth Aleph Res House.
Wilson, John Harner . . . *Philadelphia, Pa.* . Paige Hall, 7.

### Middle Class.

| | | |
|---|---|---|
| Bartlett, Alden Eugene | *Newtonville* | Paige Hall, 30. |
| Benton, Herbert Elmon<br>A. B., 1894. | *Annisquam* | Paige Hall, 13. |
| Bissell, Flint Mandrin | *Wellesley* | Paige Hall, 23. |
| Earle, Augusta Gertrude | *Somerville* | 8 Franklin St. |
| Eills, John | *Lowell* | Boston Ave. |
| Fortier, George Ferdinand | *Somerville* | Paige Hall, 12. |
| Jones, Clifford Ernest | *Cleveland, O.* | Paige Hall, 10. |
| Leavitt, Fenwick Lasselle | *Auburn, Me.* | Paige Hall, 24. |
| Macduff, Isabella Stirling | *Claremont, N. H.* | Talbot Ave. |
| Powers, Mariette | *Rumford Falls, Me.*, | Metcalf Hall, 10. |
| Robbins, Clarence Guy | *Melrose* | Paige Hall, 31. |
| Small, Willard Stanton<br>A. B., 1894. | *Provincetown* | Mt. Pleasant Ave. |
| Smith, Nancy Wiley Paine | *Tufts College* | Boston Ave. |
| Taylor, Fred Allan<br>A. B., 1886. | *W. Somerville* | 38 Wallace St. |
| Thompson, George Linnæus, | *Stafford, Conn.* | Paige Hall, 29. |
| Walker, Fred Storer<br>A. B., 1894. | *Portland, Me.* | Paige Hall, 8. |

### Junior Class.

| | | |
|---|---|---|
| Amies, Olive Josephine | *Philadelphia, Pa.* | Metcalf Hall, 8. |
| Ball, Dwight Ambrose | *Bellows Falls, Vt.*, | Paige Hall, 22. |
| Barney, Edward Mitchell | *Lynn* | Paige Hall, 20. |
| Boivin, Bertram D. | *Hinsdale, N. H.* | Paige Hall, 15. |
| Eaton, Clarence Livingstone,<br>A. B., 1895. | *Worcester* | Paige Hall, 36. |
| Mathew, Tacy<br>A. B., Buchtel College, 1895. | *Wilmington, O.* | 102 Curtis Street. |
| Milton, Lucy Almira | *Waverley* | 90 Curtis Street. |
| Rouillard, Harry Enoch | *Hinsdale, N. H.* | Paige Hall, 1. |
| Taylor, William John<br>B. S., Univ. of Minnesota, 1895. | *Minneapolis, Minn.*, | Paige Hall, 25. |

### Sub-Junior Class.

| | | |
|---|---|---|
| Austin, Fannie Elmira | *Akron, O.* | 102 Curtis Street. |
| Lane, Arthur Kempton | *Boston* | Paige Hall, 5. |
| Patterson, Charles Franklin, | *Medford* | Paige Hall, 34. |
| Reifsnider, Edson | *Chicago, Ill.* | Paige Hall, 27. |

### Special Students.

| | | |
|---|---|---|
| Eills, Corinne Dicks | *Tufts College* | Boston Ave. |
| Goldthwaite, Elizabeth Holt, | *Danvers* | 20 Conwell Ave. |
| Selman, Marcia Martin | *Marblehead* | 90 Curtis Street. |

## MEDICAL SCHOOL.

### Senior Class.

| | |
|---|---|
| Avedisian, Avedis der | *Armenia.* |
| Averill, George Goodwin, M. D. | *Montague, Me.* |
| Barry, James Henry | *Charlestown.* |
| Bowker, Jane Howorth | *Brookline.* |
| Brightman, Helen | *Acushnet.* |
| Brousseau, William Gilbert | *Boston.* |
| Chandler, Frederick Emerson | *Dorchester.* |
| Charest, Joseph Amedee, D. V. S. | *Montreal, P. Q.* |
| Cleary, James, D. D. S. | *Leominster.* |
| Coon, William Hall | *Wakefield.* |
| Cummings, William Sinnott | *West Stoughton.* |
| Cushing, Charles Baldwin | *Cohasset.* |
| French, John Innes | *Woburn.* |
| Gage, George Asahel | *Holyoke.* |
| Greene, William Henry | *Roxbury.* |
| Grovestein, William Pride | *Cambridge.* |
| Harvey, Frank, D. V. S. | *Boston.* |
| Holmes, Harry Clinton | *Cambridge.* |
| Johnstone, William Joseph, M. D. | *Boston.* |
| Kelleher, Patrick Francis | *Cambridge.* |
| Leavitt, Edward Alden | *Boston.* |
| Littig, Marq D., D. D. S. | *Davenport, Iowa.* |
| MacDermott, Robert Langdon | *New York City.* |
| MacDonnell, John, M. D. | *South Boston.* |
| McNamara, Eugene Thomas | *Camden, Me.* |
| McNeil, Archibald | *New Haven, Conn.* |
| Moir, Archibald Campbell Milton | *Cambridge.* |
| Ordway, Charles Anthony | *Concord, N. H.* |
| Patch, Annie Sophia Kenny | *Farmington, N. H.* |
| Patrick, Thomas William, M. D. | *Boston.* |
| Pillsbury, Ernest Dean | *Somerville.* |
| Pond, Eleanor Dorcas, A. B. | *Medway.* |
| Rice, Walter Henry | *Waltham.* |
| Robinson, Fred Hilliard | *Somerville.* |
| Russell, Frederick James | *New Bedford.* |
| Stevens, Sara Elmina | *Roxbury.* |
| Tilton, Letitia Marie, M. D. | *Boston.* |
| Whipple, Albert Lawrence, M. D. | *Hamilton.* |

## Middle Class.

| | |
|---|---|
| Avedisian, Hagop der | *Armenia.* |
| Bailey, Ernest Harry | *Northfield, Vt.* |
| Bartlett, Robert Lander, D. M. D. | *Lynn.* |
| Birmingham, Louis Howland | *Malden.* |
| Bowman, Anthony William | *Charlestown.* |
| Bourn, Cora Etta | *Providence, R. I.* |
| Brooks, Simon Pomeroy, A. B. | *Springfield.* |
| Burgess, Charles James | *Lawrence.* |
| Chevigny, Henry Herbert | *Brockton.* |
| Cochrane, George William | *Franklin.* |
| Cote, Henry Joseph | *Boston.* |
| Djelalian, Hairabed F. | *Dardanelles, Turkey.* |
| Ellard, Elizabeth Marie | *Boston.* |
| Ford, Michael Angelo | *Cambridgeport.* |
| Frost, Flora Eva | *Granby.* |
| Goddard, Henry Edward, A. B. | *Brockton.* |
| Griffin, Fred Stanley | *Cochituate.* |
| Hart, Francis Joseph | *Charlestown.* |
| Hayden, Lewis Brooks | *Augusta, Me.* |
| Healey, John Aloysius | *East Boston.* |
| Hearn, Thomas Henry | *Boston.* |
| Heaton, Thomas Henry | *Cambridge.* |
| Hickey, Lawrence Joseph | *Brighton.* |
| Hopkins, Bertrand Hiram | *West Medford.* |
| Howland, Edgar Joseph | *Somerville.* |
| Johnson, Henry Peyton | *Richmond, Va.* |
| Lord, Lester Winslow | *West Ossipee, N. H.* |
| Mackintosh, Ernest Robert | *Brookline.* |
| Macy, Fred Stevens | *Malden.* |
| McGee, Fannie Maria | *Newton.* |
| Moffatt, Robert Tucker, D. M. D. | *Boston.* |
| Morse, Frederick Otis | *East Boston.* |
| Murphy, Jeremiah Edward | *Somerville.* |
| Orr, Samuel Sanford | *Port Morien, C. B.* |
| Peck, Luke Baker | *Brookline.* |
| Pigott, Thomas Edmund | *Winthrop.* |
| Place, Ralph Waldo | *Boston.* |
| Proctor, John Donald | *Keene, N. H.* |
| Riley, Elizabeth Angela | *Chelsea.* |
| Ryan, John Francis | *Brookline.* |
| Sexton, James Henry, Jr. | *Malden.* |
| Shaw, Thomas Wignall | *Somerville.* |
| Simpson, Joseph | *Boston.* |

| | |
|---|---|
| Shisler, William Henry | *Fort Erie, Ont.* |
| Smith, Lewis Albert | *Warren.* |
| Sullivan, Francis Augustus | *Cambridge.* |
| Walker, Albert Gustavus | *Boston.* |
| Webber, Sarah Southworth | *Newton.* |
| Young, James Alexander | *East Boston.* |

## Freshman Class.

| | |
|---|---|
| Abel, Thomas Earl | *Lynn.* |
| Bacon, Joseph Chester | *Brookline.* |
| Baker, Lewis Forrester | *Wollaston.* |
| Beal, Herman Alaric | *Mattapan.* |
| Berg, Tekla | *Sweden.* |
| Bertrand, Alexis Everiste | *Lowell.* |
| Bowens, Bruce Tucker | *Wilmington, N. C.* |
| Brown, John | *Fall River.* |
| Butler, Mary Louise | *Bayou Sara, La.* |
| Caisse, George Emil | *Lowell.* |
| Corbett, Francis Alfred | *Newport, R. I.* |
| Crittenden, Harrison Murray | *Haverhill.* |
| Dalton, Henry | *Cambridgeport.* |
| Davis, Winnefred Puffer | *Fort Madison, Ia.* |
| Donaldson, Olive Kate | *Worcester.* |
| Dow, David Crocker | *Cambridgeport.* |
| Dresser, Arthur James, V. S. | *Hinsdale.* |
| Evans, Reuben Osgood | *Malden.* |
| Flynn, John Leo | *Cambridgeport.* |
| Foster, Harry Ruffee | *Chelsea.* |
| Gilbert, Frank Leslie | *Boston.* |
| Gleason, Patrick Sebastian | *Waltham.* |
| Groll, Maximilian Charles | *Roxbury.* |
| Groppner, Max Karl | *Germany.* |
| Hall, Walter Davis | *Medford.* |
| Hamblen, Edward Everett | *Somerville.* |
| Herrick, Florence Adelaide | *Cambridge.* |
| Holland, William Timothy | *Winchester.* |
| Holmes, Harry Clinton | *Cambridge.* |
| Holmes, Luke Melvin | *New Haven, Conn.* |
| Ives, Henry | *Boston.* |
| Joslin, Edward Herbert | *Keene, N. H.* |
| Judkins, Anna Gertrude | *Boston.* |
| Kelley, Joseph Henry Hart | *Charlestown.* |
| Ladd, Fred Eugene | *Brockton.* |
| Lane, Frank Ellsworth | *Cambridgeport.* |

| | |
|---|---|
| Ledwell, Richard John | *Boston.* |
| Libby, Mary Gordon | *Boston.* |
| Lilly, Thomas Eugene | *Lawrence.* |
| Lockwood, Charles Edwin | *Binghamton, N. Y.* |
| Lublin, Janet | *Boston.* |
| MacCabe, Arthur | *Cambridgeport.* |
| MacDonald, Archibald A. | *St. Andrews, N. S.* |
| Maxwell, Virginia | *Winchester.* |
| Mayers, John Edward | *South Boston.* |
| Meek, Edith R. E. | *Fall River.* |
| Merrill, Stephen Douglass | *Boston.* |
| Parsonnet, Augusta | *Boston.* |
| Parsonnet, Victor | *Boston.* |
| Peabody, Sophia Reed | *Lawrence.* |
| Pease, Charles Valentine | *Dorchester.* |
| Petluck, Joseph | *Boston.* |
| Prior, James Edward | *Plainville, Conn.* |
| Reid, Eustace Palmer | *Somerset, N. S.* |
| Ryan, George Whitehouse | *Boston.* |
| Santosuosso, Joseph | *Boston.* |
| Saville, George Kittredge, Jr. | *Boston.* |
| Schofield, Otho | *Black River, N. S.* |
| Shershefsky, Cecilia | *Portland, Me.* |
| Siske, Harry Edward | *Palmer.* |
| Slack, Frank Hervey | *North Abington.* |
| Smith, Alfred Charles | *Malden.* |
| Stevens, Ruey Bartlett | *Roslindale.* |
| Stodder, Charles William | *Jamaica Plain.* |
| Street, Lionel Alexander Burnet | *Beachmont.* |
| Stroud, Charles Crawford, A. B. | *Tufts College.* |
| Tobey, Nathan Paul | *Cambridgeport.* |
| Truworthy, Harry Leslie | *East Newport, Me.* |
| Thompson, Peter Hunter | *Boston.* |
| Wellington, Mary E. | *New York City.* |
| Wilson, Almira Janette | *Boston.* |
| Wilson, Joseph Aloysius | *Charlestown.* |
| Wood, Mary Anna | *Pittsfield.* |
| Woodhead, Raynor | *Pawtucket, R. I.* |

### Special Students.

| | |
|---|---|
| Allison, George Woodbury | *Charlestown.* |
| Cook, Charles H., Jr. | *Concord, N. H.* |
| Greene, Willard Beckwith | *Cambridge.* |
| Harris, Sylvia Fowler | *Berkeley, Cal.* |

| | |
|---|---|
| Hartshorn, Edward | *Somerville.* |
| Holbrook, Helen | *Waltham.* |
| Larabee, Frank Walton | *Auburn, Me.* |
| Pecanso, Fannie Abbott | *Lawrence.* |
| Pedrick, Catherine Frances | *Lawrence.* |
| Taft, Edward Henry | *W. Gouldsboro, Me.* |
| Wagner, Emma J. | *West Somerville.* |
| White, Flora Jane | *Boston.* |
| Williams, Adelbert Franklin | *Gardiner, Me.* |

## SUMMARY.

CORPS OF INSTRUCTION:

| | |
|---|---|
| Emeritus | 2 |
| Active | 55 |
| Assistants | 19 |
| Lecturers | 12 |
| Total engaged in work of instruction | 86 |

### Students.

| | | |
|---|---|---|
| COLLEGE OF LETTERS: | | |
| Graduate | 7 | |
| Senior | 37 | |
| Junior | 39 | |
| Sophomore | 60 | |
| Freshman | 88 | |
| Special | 19 | |
| | — | 250 |
| DIVINITY SCHOOL: | | |
| Senior | 9 | |
| Middle | 16 | |
| Junior | 9 | |
| Sub-junior | 4 | |
| Special | 3 | |
| | — | 41 |
| MEDICAL SCHOOL: | | |
| Senior | 38 | |
| Middle | 49 | |
| Freshman | 74 | |
| Special | 13 | |
| | — | 174 |
| TOTAL NUMBER OF STUDENTS | | 465 |

# THE COLLEGE OF LETTERS

# Faculty of the College of Letters.

---

ELMER H. CAPEN, D. D., PRESIDENT.
*Professor of Moral Philosophy and Political Economy.*
JOHN P. MARSHALL, A. M., DEAN.
*Pearson Professor of Geology and Mineralogy.*
JEROME SCHNEIDER, PH. D.
*Professor of the Greek Language and Literature.*
HEMAN A. DEARBORN, A. M.
*Professor of the Latin Language and Literature.*
WILLIAM R. SHIPMAN, D. D.
*Professor of Rhetoric, Logic, and Metaphysics.*
BENJAMIN G. BROWN, A. M.
*Walker Professor of Mathematics.*
CHARLES D. BRAY, C. E., A. M.
*Professor of Civil and Mechanical Engineering.*
CHARLES E. FAY, A. M.
*Wade Professor of Modern Languages.*
AMOS E. DOLBEAR, M. E., PH. D.
*Professor of Physics and Astronomy.*
WILLIAM L. HOOPER, A. M.
*Professor of Electrical Engineering.*
DAVID L. MAULSBY, A. M.
*Professor of English Literature and Oratory.*
J. STERLING KINGSLEY, S. D.
*Professor of Biology.*
FRANK P. GRAVES, A. M., PH. D.
*Professor of Classical Philology.*
GARDNER C. ANTHONY, A. M.
*Professor of Technical Drawing.*
ARTHUR MICHAEL, A. M., PH. D.
*Professor of Chemistry.*
LEO R. LEWIS, A. M.
*Professor of the History and Theory of Music.*
FRANK W. DURKEE, A. M.
*Assistant Professor of Chemistry and Instructor in Physical Training.*
FRANK E. SANBORN, S. B.
*Instructor in Mechanical Engineering.*
EDWIN A. START, A. M.
*Instructor in History.*

FRANK T. DANIELS, A. M. B., SECRETARY.
*Instructor in Civil Engineering.*

HORATIO W. MYRICK, A. M. B.
*Walker Special Instructor and Instructor in Electrical Engineering.*

THOMAS WHITTEMORE, A. B.
*Instructor in English.*

JOHN E. BUCHER, A. C., PH. D.
*Instructor in Organic Chemistry.*

CHARLES ST. CLAIR WADE, A. M.
*Instructor in French.*

FRANK G. WREN, A. B.
*Instructor in Mathematics.*

HOWARD H. HIGBEE, A. B., PH. D.
*Instructor in Quantitative Analysis.*

## STANDING COMMITTEES OF THE FACULTY.

PROMOTIONS: Professor Shipman, *Chairman;* Professors Hooper, Brown, Fay, and Assistant Professor Durkee.

SCHOLARSHIPS AND AIDS: President Capen, *Chairman;* Professors Shipman and Dearborn.

PROGRAM: Mr. Start, *Chairman;* Professors Hooper, Dearborn, Brown, and Lewis.

CATALOGUE: Mr. Start, *Chairman;* Professors Hooper and Maulsby.

MEMBERS ON THE PART OF THE FACULTY OF THE ADVISORY COMMITTEE ON ATHLETICS: Professor Knight (from the Divinity School), *Chairman;* Assistant Professor Durkee, and Mr. Start.

GLEE CLUB: Professor Lewis, *Chairman;* Professor Graves, and Professor Knight (from the Divinity School).

FRESHMAN PLANS OF STUDY: Professor Dearborn, *Chairman;* Professors Shipman, Brown, Graves, and Lewis.

DEPARTMENT OF ENGINEERING: Professor Brown, *Chairman;* President Capen, Professors Hooper and Bray, and Assistant Professor Durkee.

BOOKS AND SUPPLIES: Professor Lewis, *Chairman;* Assistant Professor Durkee, and Mr. Wren.

# Requirements for Admission.

## SUBJECTS OF EXAMINATION.

The subjects in which candidates for admission to the Freshman Class may be examined are given below. The requirements for candidates for the several courses will be found in the schedule of examination groups on pages 44, 45, and 46.

**Latin.** **1.** LATIN GRAMMAR. — Allen and Greenough's or Harkness's Grammar, including Prosody.

**2.** CÆSAR. — Gallic War, Books I–IV.

**3.** CICERO. — Orations against Catiline, for Archias, Marcellus, and the Manilian Law.

**4.** VIRGIL. — Æneid, Books I–VI.

**5.** OVID. — Metamorphoses, 2,500 lines.

**6.** LATIN COMPOSITION. — Collar's Latin Composition, and translation into Latin of a connected passage of English prose, not taken from the text-book, but involving only familiar words and idioms.

ALTERNATIVES. — While the foregoing requirements are preferred, equivalents will be accepted; also in place of the last two orations of Cicero and requirement 5, an examination may be taken, if desired, on average passages from the above-named works, not included in the portions prescribed.

**Greek.** **7.** GREEK GRAMMAR. — Hadley-Allen's or Goodwin's Greek Grammar, including Prosody.

**8.** XENOPHON. — Anabasis, four books.

**9.** HOMER. — Iliad, three books.

**10.** GREEK COMPOSITION. — The translation into Greek of a connected passage of English prose. Woodruff's Greek Composition is recommended as a drill-book.

ALTERNATIVES. — In place of requirements 8 and 9, translation at sight of easy passages of the Anabasis and average passages from the Iliad (with a vocabulary of the less-used words).

**German.** **11.** ELEMENTARY GERMAN.

(*a*) Proficiency in elementary grammar, implying especially familiarity with the following topics: declension of such nouns as are readily classified, of adjectives, and pronouns; conjugation of weak and of the more usual strong verbs; the more common prepositions;

**German.**

the simpler uses of the modal auxiliaries; the simpler rules of syntax and of word order.

[This specification of topics is not proposed as restrictive, but rather to emphasize the importance of a thorough grounding of the pupil in those elements on which later good work is necessarily founded. Proficiency in grammar may be tested both by direct questioning and through translation of simple English into German.]

(*b*) Ability to translate a passage of simple prose at sight, a vocabulary of the less-used words being furnished.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from one hundred and fifty to two hundred duodecimo pages of easy German, chiefly narrative prose with a few lyric poems.]

(*c*) Ability to pronounce German, and to recognize German words and simple phrases when uttered.

[It is recommended that careful attention be given from the beginning to the fluent and intelligent reading aloud of the German works used in the class-room.]

### 12. INTERMEDIATE GERMAN.

(*a*) The candidate must give evidence of a thorough knowledge of the elementary grammar (see above, 11*a*), and of the use of modes and tenses.

(*b*) He must have translated the equivalent of four hundred pages of German, including Wilhelm Tell (Schiller), and twenty pages of lyrics or ballads.

(*c*) He must be able to pronounce German, and to render simple English sentences into that language.

### 13. ADVANCED GERMAN.

(*a*) Proficiency in more advanced grammar. In addition to a thorough knowledge of accidence (including the elements of word-formation) and of the principal values of prepositions and conjunctions, the candidate must be familiar with the essentials of German syntax, particularly that of the modal auxiliaries and the subjunctive and infinitive modes.

(*b*) Ability to translate ordinary German, to be acquired by the reading, in addition to the elementary requirement, of the following works: Der Fluch der Schönheit (Riehl); Aus dem Staat Friedrichs des Grossen (Freytag); Die Harzreise (Heine); the first three books of Dichtung und Wahrheit (Goethe); Minna von Barnhelm (Lessing); Wilhelm Tell and Das Lied von der Glocke (Schiller); and thirty pages of lyrics or ballads.

(*c*) Ability to write in German a paragraph upon an assigned subject chosen from the works specified in the preceding section.

[While, at the examination, matters of very subordinate interest or of minor detail will not be set as subjects for composition, it is hoped that teachers may be led by this requirement to stimulate from the beginning the pupil's interest in the subject-matter of the works read in preparation.]

**French.**

**14.** ELEMENTARY FRENCH.

(*a*) Proficiency in elementary grammar, implying especially familiarity with the following topics: inflection of nouns and adjectives for gender and number, excepting unusual cases; the "pronominal adjectives"; the use of pronouns, especially the forms and positions of personal pronouns; the partitive constructions; the inflection of the regular and the more usual irregular verbs, — such as *dire*, *faire*, and the classes represented by *ouvrir*, *sentir*, *venir*, *paraître*, *conduire*, and *craindre*.

[See note under elementary German (*a*).]

(*b*) Ability to translate simple prose at sight.

[It is believed that the requisite facility can be acquired by reading, concurrently with the work in the grammar, from two hundred to four hundred duodecimo pages from at least three dissimilar works.]

(*c*) Ability to pronounce French, and to recognize French words and simple phrases when uttered.

[See note under Elementary German (*c*).]

**15.** INTERMEDIATE FRENCH.

(*a*) and (*c*) as above.

(*b*) He must have translated the equivalent of five hundred pages of French, including the plays, Mademoiselle de la Seiglière (Sandeau) and Athalie (Racine).

**16.** ADVANCED FRENCH.

(*a*) Proficiency in more advanced grammar. In addition to a knowledge of the accidence and of the values of prepositions and conjunctions, the candidate must be familiar with the essentials of French syntax, especially the use of modes and tenses, and with the more frequently recurring idiomatic phrases.

(*b*) Ability to translate standard French, to be acquired by reading, in addition to the elementary requirement, not less than one thousand duodecimo pages, including Le Siège de Berlin and La dernière Classe (Daudet); Colomba (Mérimée); Mademoiselle de la Seiglière, the play (Sandeau); Jeanne Darc (Henri Martin); and one play each of Corneille, Racine, and Molière.

(*c*) Ability to write in French a paragraph upon an assigned subject chosen from the works specified in the preceding section.

[See note under Advanced German (*c*).]

**Mathematics.**

**17.** ARITHMETIC, including the Metric System.

**18.** ALGEBRA, through quadratic equations, including radical quantities, together with proportion, arithmetical and geometrical progression, and the binomial theorem for positive integral exponents.

**Mathematics.**

19. PLANE GEOMETRY.

20. SOLID GEOMETRY.

**History.**

21. (*a*) ANCIENT HISTORY (Greece and Rome), or
(*b*) MEDIÆVAL AND MODERN EUROPEAN HISTORY, or
(*c*) THE HISTORY OF ENGLAND AND THE UNITED STATES.

The following text-books are recommended and will indicate the amount of preparation required: (*a*) and (*b*), Sheldon's Outlines of General History; (*a*), for Ancient History, Oman's or Smith's (smaller) Greece, Allen's Roman People; for Mediæval and Modern Europe, Myers's General History; for the History of England and the United States, Montgomery's Leading Facts in English History, Fiske's History of the United States for Schools, Johnston's History of the United States for Schools. The use of such manuals as Wilder's English History (Laboratory method) and Bacheler's American History (Library method) is helpful.

**English.**

22. ENGLISH.

*Note.* — No candidate will be accepted in English whose work is notably defective in point of spelling, punctuation, syntax, idiom, or division into paragraphs.

1. *Reading and Practice.* — A certain number of books will be set for reading. The candidate will be required to present evidence of a general knowledge of the subject-matter, and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics, to be chosen by the candidate from a considerable number — perhaps ten or fifteen — set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may be allowed to present an exercise book, properly certified by his instructor, containing compositions or other written work done in connection with the reading of the books.

The books set for this part of the examination will be: —

1896. — Shakespeare's A Midsummer Night's Dream; Defoe's History of the Plague in London; Irving's Tales of a Traveller; Scott's Woodstock; Macaulay's Essay on Milton; Longfellow's Evangeline; George Eliot's Silas Marner.

1897. — Shakespeare's As You Like It; Defoe's History of the Plague in London; Irving's Tales of a Traveller; Hawthorne's Twice Told Tales; Longfellow's Evangeline; George Eliot's Silas Marner.

1898. — Milton's Paradise Lost, Books I and II; Pope's Iliad, Books I and XXII; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner;

**English.** Southey's Life of Nelson: Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal: Hawthorne's The House of the Seven Gables.

2. *Study and Practice.* — This part of the examination presupposes the more careful study of each of the works named below. The examination will be upon subject-matter, form, and structure; and will also test the candidate's ability to express his knowledge with clearness and accuracy. The books set for this part of the examination will be:—

1896. — Shakespeare's The Merchant of Venice; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Webster's First Bunker Hill Oration.

1897. — Shakespeare's The Merchant of Venice; Burke's Speech on Conciliation with America; Scott's Marmion; Macaulay's Life of Samuel Johnson.

1898. — Shakespeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Tennyson's The Princess.

**Sciences.** **23.** PHYSICS. — The requirement in Physics is an acquaintance with the subject as treated in Avery's or Gage's work, or any other of similar grade, with special attention to Mechanics and ability to work out numerically problems in that department.

**24.** CHEMISTRY. — Remsen's Briefer Course or its equivalent.

**25.** NATURAL HISTORY. — Any two of the four subjects: Botany, Zoölogy, Physiology, or Geology. The amount required in each is essentially covered by any good text-book for secondary schools. In Botany and Zoölogy, laboratory work is of more importance than the study of the text-book. As illustrating the character of preparation required, the following books may be mentioned: In Botany, Bessey's Briefer Course, Campbell's Structural and Systematic Botany, or Spaulding's Introduction to Botany; in Zoölogy, Colton's Practical Zoölogy; in Physiology, Huxley's Elementary Physiology, Jenkins's Advanced Lessons in Human Physiology, or Martin's Human Body, briefer course; in Geology, Dana's Geological Story Briefly Told, or Leconte's Elements of Geology.

**26.** FREEHAND DRAWING. — Outline drawing from simple casts, geometric models, and groups of models.

## EXAMINATION GROUPS.

**For courses leading to degree of A. B.**

Candidates for courses leading to the degree of Bachelor of Arts must take their examination in the subjects comprised in one of the two following groups:—

**For courses leading to degree of A. B.**

### Group I.

LATIN, 1, 2, 3, 4, 5, and 6.
GREEK, 7, 8, 9, and 10.
GERMAN, 11, or FRENCH, 14.
MATHEMATICS, 17, 18, and 19.
HISTORY, 21.
ENGLISH, 22.

### Group II.

LATIN, MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 13. } or { FRENCH, 14 and 16.
FRENCH, 14. } or { GERMAN, 11.

This group differs from Group I in the substitution for Greek of advanced work in Modern Languages.

**For courses leading to degree of Ph. B.**

Candidates for courses leading to the degree of Bachelor of Philosophy must take their examination in the subjects comprised in one of the two following groups: —

### Group III.

LATIN, MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 12. } or { FRENCH, 14 and 15.
FRENCH, 14. } or { GERMAN, 11.

### Group IV.

MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 13. } or { FRENCH, 14 and 16. } or { GERMAN, 11 and 12.
FRENCH, 14. } or { GERMAN, 11. } or { FRENCH, 14 and 15.
PHYSICS, 23.
CHEMISTRY, 24.
NATURAL HISTORY, 25.

[LATIN, 1, 2, 3, and a part of 4, or their equivalent, will be accepted in place of one intermediate Modern Language, that is, GERMAN, 11 and 12, or FRENCH, 14 and 15.]

Groups III and IV are offered to meet the needs of graduates of the English courses, so called, in the best high schools, who may desire to enter upon college study looking toward a degree. It will be seen, by reference to the appropriate numbers in the preceding subject list, that Group III accepts a smaller amount of preparation in the modern languages than

**For courses leading to degree of Ph. B.** that required for entrance through Group II to courses leading to the degree of Bachelor of Arts. Group IV allows the substitution for Latin of an increase over the requirement of Group III in modern languages, and of elementary work in three scientific subjects.

**For courses leading to degree of S. B.**

### Group V.

MATHEMATICS, HISTORY, and ENGLISH, as in I.
LATIN, 1, 2, and in 4, four books of the Aeneid; or
GERMAN, 11 and 12; or
FRENCH, 14 and 15.

SCIENCE: One year's work, with a weekly average of at least three periods of class work, in one of the following: Chemistry, Physics, Physiology, Botany, Zoölogy, Geology, Drawing.

This examination group admits to the courses leading to the degree of Bachelor of Science: the General Course in Science, the Special Courses in Biology and Chemistry, and the Medical Preparatory Course. These courses are intended primarily for graduates of English high schools who have a special object before them lying along the lines laid out for these courses.

**For Candidates for Engineering Courses.** Candidates for the courses leading to the degrees of Bachelor of Electrical or Civil Engineering will be required to take the subjects comprised in

### Group VI.

MATHEMATICS, 17, 18, 19, and 20.
GERMAN, 11, or FRENCH, 14.
ENGLISH, 22.
DRAWING, 26.

## GENERAL INFORMATION RELATING TO EXAMINATIONS.

The regular examination for admission will begin on the day after Commencement, and continue through the two following days. A second examination will be held on the Tuesday, Wednesday, and Thursday preceding the beginning of the college year. The examination will begin at 9 o'clock A. M., on each of these days. The assignment of examination subjects appears in the Calendar, pages 4 and 5.

At the regular examination in June, those who will be candidates for admission to the Freshman class one year later may present themselves for a preliminary examination, if certified by their teachers to be prepared in not less than half of the number of subjects required for admission to the course proposed, and may receive certificates if they pass in not less than three quarters of the number of subjects presented. English may be presented at the final examination only.

For admission to advanced standing, an examination must be well sustained both in the preparatory studies and in the studies in which the candidate desires credit for advanced work.

The certificates of teachers in schools of good standing, whose courses have been approved, are accepted in lieu of an examination. To be received, the certificate (blank forms of which will be sent on application to the Registrar of the College) must specify which of the subjects have been pursued and to what extent, or what are offered as equivalents in case the preparatory course has differed from that presupposed in the foregoing requisitions, and must express the opinion of the teacher that the candidate is well prepared to enter upon a college course. Certificates must be in the hands of the Registrar at least four weeks before the beginning of the college year. Candidates so admitted will be regarded as upon a special probation, which may be terminated at any time if their preparation is found to be inadequate.

A fee of five dollars must be paid in advance by every candidate who is examined at any other place than the College.

# Requirements for Degrees.

Students may enter upon their work in the courses in Liberal Arts as candidates for the degree of Bachelor of Arts, or for that of Bachelor of Philosophy, or for that of Bachelor of Science, according to the examination group upon which they are admitted to the college. In any case the ground of promotion and of graduation is the intellectual attainment of the individual student, not a fixed requirement of a certain number of years of study. Candidates for the degree of Bachelor of Philosophy will be necessarily somewhat more limited in their selection of subjects because of the nature of their preparation, while the courses leading to the degree of Bachelor of Science consist mainly of prescribed work on special lines. Those who have fulfilled the requirements for the degree of Bachelor of Philosophy may obtain the degree of Bachelor of Arts on the satisfactory completion of twenty-four term hours of additional work in approved elective subjects.

The plan of study offered to the student is at once liberal, controlled, and elastic. It combines the requirements of the general culture, which is the prime object of the undergraduate college course, with an opportunity for the development of the individual on the lines to which he is especially adapted, and for preparation for university and professional study. Throughout the courses students have large liberty in choosing their work, but they are brought into personal advisory relations with the major instructors, who arrange and guide a considerable portion of their work after its general direction has been determined. A reasonable amount of guided specialization is thus provided for, while the personal relations of the student with the major instructor form a valuable adjunct to the routine work of instruction in developing the interest and the character of the students. All work actually accomplished by the student in regular standing counts toward the attainment of the degree. The period within which the degree may be attained depends upon the industry and ability of the individual student.

## SYNOPSIS OF THE REQUIREMENTS

### For A. B. and Ph. B.

[NOTE.—Each department offers a series of subjects for study. The unit for indicating the requirements is the *term hour*, which represents the number of program hours per week required in each subject, expressed for a period of one term. Thus a subject calling for three hours a week, for one term, represents a requirement of three term hours; if it calls for three hours a week for one year, or two terms, the requirement in that subject is six term hours.]

(1) The requirement for the degree of Bachelor of Arts or Bachelor of Philosophy is the satisfactory completion of subjects aggregating one hundred and twenty-eight term hours.

(2) The program of prescribed studies is as follows:—

| | TERM HOURS. |
|---|---|
| LANGUAGES (Latin, Greek, French, German; each student to take *three*) . . . . . . . . . . . | 18 |
| ENGLISH (Rhetoric, Composition, Themes, Oratory) | 12 |
| MATHEMATICS . . . . . . . . . . . . . . . . | 6 |
| SCIENCE (Physics, Chemistry, Biology; each student to take *one*) . . . . . . . . . . . . . . | 6 |
| MENTAL AND MORAL SCIENCES (Philosophy, History, Political Science; each student to take *one full or two half* subjects) . . . . . . . . | 6 |
| PHYSICAL TRAINING . . . . . . . . . . . . | 2 |
| A total of . . . . . . . . . . . . . . . . | 50 |

The requirements are by groups, not by special subjects, and in each group except English and Mathematics some choice is allowed the student.

The program of the student in the first year will be made up from the prescribed groups, except by special permission of the Faculty.

(3) At the end of the first year the student is required to choose a major department, in which he must complete, before graduation, work amounting to eighteen term hours. He may offer work already done in that subject in some one of the

prescribed groups as a part of the eighteen hours which he is required to give to his major department, but no subject indicated in the catalogue as elementary can be counted in such work. The major department and the plan of work for the first half-year must be reported by the student, in the proper form, upon registration on the opening day of the college year.

(4) Acting under the advice of the instructor in his major department, the student will make up a program of eighteen term hours in collateral subjects; that is, subjects tending to strengthen and assist his work in his major. The student's major instructor is to be his official adviser on general matters relating to his college course.

(5) The remaining forty-two term hours of the required aggregate are to be made up by the free election of the student from the various subjects offered, limited only by special restrictions applied to certain subjects.

(6) Upon the satisfactory completion of the aggregate requirement, the student is entitled to receive the Bachelor's degree, but no student shall be granted a degree in less than four years of residence, unless he shall have obtained Grade B as an average for his entire work.

### Summary.

| | | | |
|---|---|---|---|
| Prescribed work | 50 | term | hours. |
| Major department | 18 | " | " |
| Collateral subjects | 18 | " | " |
| Free electives | 42 | " | " |
| | 128 | " | " |

### For S. B.

The requirement for the degree of Bachelor of Science is the satisfactory completion of one hundred and twenty-eight term hours, according to the programs for the General Science Course, Special Courses in Biology and Chemistry, and Medical Preparatory Course, on pages 83 to 86. The highly specialized character of these courses leaves only a small allowance of time outside the prescribed subjects, but there is a limited amount of time at the disposal of the student for free election.

# Departments of Instruction.

## MAJOR DEPARTMENTS.

Any of the following may be chosen as major departments: —

ENGLISH LITERATURE.
FRENCH.
GERMAN.
LATIN.
GREEK.
PHILOSOPHY.
HISTORY.
POLITICAL SCIENCE.
MATHEMATICS.
PHYSICS.
CHEMISTRY.
BIOLOGY.
ENGINEERING.

In the subjoined statement of the work done in the different departments, the name of the major instructor is that given at the head of each department which offers a major course. In other cases the name is given of the instructor in general charge of the department. Names of instructors in charge of each subject are appended to the brief statement of the subject itself.

Bracketed subjects will not be given in 1895–6. In many cases alternates are indicated, which fill their places in the program for this year. All subjects continue through the year unless otherwise indicated.

A tabular view of the program of hours assigned to the subjects in the courses in Liberal Arts follows the subjoined statements of the several departments. No two subjects assigned to the same hour can be taken simultaneously by any student.

## ENGLISH.

Professor Shipman.

The course of instruction in English aims at both theoretical knowledge and practical results. It begins with extemporaneous composition in the Freshman year. In this exercise, which is weekly, formal theme-writing is avoided. Topics are

assigned, with some variety of method, at the time of writing, usually not the same topic for all, but a list is furnished from which each writer may select, giving preference to what is nearest at hand and best understood. The brief essays are subject to criticism both in class and with the individual writers. With suitable modification, this extemporaneous writing is continued at intervals to the end of the course. The formal study of Rhetoric begins with the second year. A text-book is used as the basis of instruction, and is made, as far as possible, a help to the intelligent discussion of principles, rather than a burden to be carried. Rhetorical precepts are applied in the criticism of this course, and especially in composition, which is required to the middle of the third year. The student's work in literature and other departments of college study is made to furnish real occasion, as well as material, for the preparation of essays. The required Rhetoric may be followed by an elective course in some of its applications, or exclusively in composition.

### SUBJECTS.

**1.** — Composition. Lectures, discussion of papers. *One hour a week for the first year. Tuesday at* 2. PROFESSOR SHIPMAN.

**2.** — Rhetoric, with practical exercises. Second year. *Monday, Wednesday, and Friday at* 10.45 (*first half-year*). MR. WHITTEMORE.

**3.** — Composition and Themes. Second year. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. WHITTEMORE.

**4.** — Principles and Practice of Debate. Open to students who have completed 1, 2, and 3 or 5. *Tuesday and Thursday at* 8.45 (*first half-year*). PROFESSORS SHIPMAN AND MAULSBY.

**5.** — Daily Composition. Elective or optional, with 4. *Five themes weekly* (*either half-year*).

PROFESSOR SHIPMAN AND MR. WHITTEMORE.

Subjects 1, 2, 3, and 5 or 4 will constitute, with Oratory 1, the prescribed work in English.

**6.** — Rhetoric (advanced course). The Principles of Style. Elective for students who have completed with credit the prescribed work in English, and to such others as may be approved by the instructor. *Monday, Wednesday, and Friday at* 11.45 (*first half-year*).

PROFESSOR SHIPMAN.

**7.** — Composition (advanced course). Elective for students who have completed the prescribed work in English. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*). PROFESSOR SHIPMAN.

## ORATORY.

### PROFESSOR MAULSBY.

It is intended that the study of oratory shall be of practical benefit to the general student, whether or not he looks to professional pursuit of the art. Exercises are practised in correct breathing, the production of tone, and in gesture; moreover, individual faults are pointed out, and, so far as possible, remedies suggested. The required course aims at reading that shall be intelligent, natural, and forcible. Attempt is made to develop, both in voice and gesture, spontaneous expression from the mental side. In the elective courses, opportunity is given for individual presentation of selections from standard literature and for practice in debate on subjects of current interest. Throughout the work the student meets the instructor personally, for rehearsal and criticism.

### SUBJECTS.

**1.** — The Principles of Oratory Exemplified in Practice. Class exercises in vocalization and gesture. *Tuesday at* 8.45.

**2** (*a*). — Study of Selections from Shakespeare and Browning. Individual presentation of standard poetry and prose. *Tuesday at* 2.

[**2** (*b*). — Study of Selections from the Great Orators. Individual presentation of forensics. *Thursday at* 2.]

**3.** — Practice in Debate. (In continuation of English 4.) *Thursday at* 8.45 (*second half-year*).

## ENGLISH LITERATURE.

### PROFESSOR MAULSBY.

The study of our literature offers opportunity for acquaintance with the work of selected writers, from the beginning to the present. Intelligent appreciation of the author's thought and of his characteristic mode of expression is the immediate result held in view. Biographical and philological details, the effect of environment, and the mass of published criticism that clusters about the great names are not neglected, although given a subordinate place. The method pursued demands attentive reading of much more than can be considered in the class-room, frequent written expression of literary judgments, and occasional private investigation of topics not otherwise treated. The library contains multiple copies of many of the authors read. It is expected that students will take the subjects in the order of the classifying numbers. Any departure from this order is to be made only by special arrangement. Subjects in brackets will be given during 1896–7.

**1.** — General View of the Whole Field. Lectures, examinations, and required reading. *Monday at* 10.45.
PROFESSOR MAULSBY, MR. WADE, MR. WHITTEMORE.

**2.**—American Literature. Lectures, required reading, special topics, essays. *Monday, Wednesday, and Friday at* 3. PROFESSOR MAULSBY.

**3.** — Study of an Author.

[ (*a*) Shakespeare. Reading of twenty-five plays, lectures, examinations, brief critical essays. *Monday, Wednesday, and Friday at* 9.45 (first half-year). PROFESSOR MAULSBY.

*Tuesday, Thursday, and Saturday at* 8.45 (*second half-year*).
MR. WHITTEMORE.]

(*b*) Chaucer. Study of forms and pronunciation, reading of selections from the Canterbury Tales and the minor poems, essays. *Monday, Wednesday, and Friday at* 9.45 (*second half-year*).
PROFESSOR MAULSBY.

[(*c*) Browning. Poems, collateral reading, lectures, brief critical essays. *Tuesday, Thursday, and Saturday at* 8.45 (*first half-year*).
MR. WHITTEMORE.]

**4.** — Study of a Period.

(*a*) The Origins. Reading of selections in Old English, prose and poetry, with so much attention to grammar as will serve intelligent appreciation of the text. *Monday, Wednesday, and Friday at* 9.45 (*first half-year*). PROFESSOR MAULSBY.

(*b*) Poetry and Drama of the Restoration. Lectures, parallel reading, essays. *Monday, Wednesday, and Friday at* 3 (*second half-year*). MR. WADE.

[(*c*) The English Romantic Movement. Lectures, copious reading, individual treatment of authors not studied in the class. *Monday, Wednesday, and Friday at* 9.45 (*second half-year*).
PROFESSOR MAULSBY.]

**5.** — English Versification. Study of poetic forms and practice in poetic composition. *Friday at* 4. PROFESSOR MAULSBY.

**6.** — Development of a Literary Form, as (*a*) the drama, (*b*) the novel, (*c*) the lyric.

[(*b*) Development of the English Novel. Much previous reading is taken for granted, and much required. Critical essays. *Wednesday at* 10.45. PROFESSOR MAULSBY.]

## GERMAN.

PROFESSOR FAY.

The aim of the department is twofold, according as the student has entered with the elementary or advanced requirement. In the former case it is to lead him in the briefest possible time to such a mastery of the language as will enable him to use it as a source of information, and medium of literary culture; where this preliminary work has already been done, to afford this literary culture itself, together with such historical and linguistic knowledge as may properly accompany advanced work in a literary department. Hence, in the elementary subjects, facility and accuracy of translation are sought by means of copious reading and careful grammatical drill; in the intermediate year the classic masterpieces are read for their own sake, together with such historical material as will throw light upon the epoch in which they were written or with which they deal; in the advanced work the systematic study of the history of the literature is undertaken, and opportunity is afforded for acquiring a knowledge of the earlier literary forms. Composition forms an important element in instruction and in the practice of the language. Though no attempt is made to teach the student to speak the language, he is trained from the outset to hear and to understand it when spoken, chiefly for the sake of the reflex influence of such practice upon pronunciation.

Six consecutive subjects are offered. While it is not impossible to take them all within the four college years, the scheme is based upon the supposition that the earlier ones will have been taken in the preparatory school.

### SUBJECTS.

**1.** — Elementary German. Joynes-Meissner Grammar, with Lewis's Exercises: Bernhardt's Im Zwielicht, II; Riehl, Burg Neideck: Buchheim's Balladen und Romanzen. *Tuesday, Thursday, Saturday, at* 9.45.
PROFESSOR FAY.

German 1 is the equivalent of the entrance requirement in Elementary German, and should be taken in the Freshman year by all who enter with a condition in that subject.

**2.** — Intermediate German. Review of grammatical principles, especially of syntax, with advanced exercises in composition; Scheffel, Ekkehard (Wenckebach edition); Freytag, Der Rittmeister von Alt-Rosen, Aus dem Staat Friedrichs des Grossen; Buchheim's Deutsche Lyrik. *Tuesday, Thursday, Saturday, at* 8.45. MR. O. F. LEWIS.

German 2 is intended for those who have passed the examination in Elementary German. It is possible for a student who has excelled in the work of German 1, and who shall have done a prescribed amount of outside reading, to omit this course and enter German 3.

**3.** — First half-year. Work introductory to classic authors. Lessing, Minna von Barnhelm; Schiller, Die Jungfrau von Orleans; Goethe, Hermann und Dorothea. Second half-year. Work in the rapid reading of recent prose authors; one theme. *Monday, Wednesday, Friday at* 9.45. PROFESSOR FAY.

Students who have passed their entrance examinations in Intermediate German continue their work in German 3. Those by whom a knowledge of the classic authors is especially desired may substitute the second half-year of German 4 for that of this subject. German 3 may be taken as an additional half-subject by more advanced students.

**4.** — Schiller and Goethe: Egmont, Maria Stuart, Wallenstein, with collateral readings in historical prose; two themes. *Tuesday, Thursday, Saturday, at* 11.45. PROFESSOR FAY.

German 4 is taken by those who pass the entrance examination in Advanced German. The last half-year's work in German 3 may be taken collaterally as a half-subject.

**5.** — Lessing and Goethe: Nathan der Weise, Laocoön; Tasso, Iphigenie auf Tauris, Faust, with collateral reading, especially from Düntzer's Commentaries. *Monday, Wednesday, Saturday, at* 11.45.
PROFESSOR FAY.

**6.** — History of German Literature: Vilmar, Kluge, with illustrative works for leading epochs. Course in Middle High German: Das Nibelungenlied; Walther von der Vogelweide. A thesis is required of candidates for honors. *Monday, Wednesday, Friday, at* 10.45.
PROFESSOR FAY.

## FRENCH.

### Professor Fay and Professor Lewis.

The plan and scope of the department are, in general, the same as those of the German department, to the statements of which the student is referred. Six consecutive subjects are offered.

**1.** — Elementary French. The essentials of Grammar, with composition; Rollins's French Reader; Masson's French Classics, Vol. V.; during second half-year, collateral reading of short prose works. *Tuesday, Thursday, Saturday, at* 9.45. Professor Lewis.

French 1 is the equivalent of the entrance requirement in Elementary French, and should be taken in the Freshman year by all who enter with a condition in that subject.

**2.** — Intermediate French. Reading, Grammar, and Composition. Review of grammatical principles, especially with reference to syntax; Exercises in Composition; Mérimée, Colomba; Sandeau, Mademoiselle de la Seiglière; Selections from Super's Readings from French History; Racine, Athalie; collateral reading of standard prose works. *Tuesday, Thursday, Saturday, at* 8.45.

Professor Lewis and Mr. Wade.

French 2 is intended for those who have passed the entrance examination in Elementary French. It is possible for a student who has excelled in the work of French 1, and who shall do a prescribed amount of outside reading, to omit this subject and enter French 3.

**3.** — First half-year. Introductory work in Seventeenth Century Classics. Corneille, Racine, Molière, Boileau, with collateral reading concerning the period. Second half-year. Course for the rapid reading of recent authors. *Monday, Wednesday, Friday, at* 8.45.

Professor Lewis and Mr. O. F. Lewis.

Students who have passed the entrance examination in Intermediate French continue their work in French 3. French 3 may be taken as an additional half-subject by more advanced students.

**4.** — First half-year. Literature and Manners of the Seventeenth Century. Crane's Société Française au XVII$^e$ Siècle; Molière, Les Précieuses Ridicules, Les Femmes Savantes; Saint-Simon; Madame de Sévigné. Second half-year. Literature of the Eighteenth Century. The Novel, the Drama, Philosophical Essays. *Monday, Wednesday, Friday, at* 8.45. Professor Fay.

French 4 is taken by those who pass the entrance examination in

Advanced French. Juniors and Seniors whose major department is French may be permitted to take 4 and 5 in the same year.

**5.** — Literature of the Nineteenth Century. The Drama, Poetry, the Novel, Criticism; Hugo, Lamartine, de Musset, Balzac, George Sand, Sainte-Beuve, Taine, and selections from contemporary authors. *Monday*, *Wednesday*, *Friday*, *at* 3. PROFESSOR LEWIS and MR. WADE.

[**6.** — Demogeot, Littérature de la Langue Française, with illustrative texts for principal epochs. Course in Old French: La Chanson de Roland; Joinville, Histoire de Saint Louis. A thesis is required of candidates for honors. PROFESSOR FAY.]

## ITALIAN.

### PROFESSOR FAY.

The work offered in Italian is open to those only who have had two years of college study in French. With such previous training, the student is able to acquire with rapidity a reading knowledge of the language, and thus to become acquainted within the year with the characteristics of contemporary and classic literature.

### SUBJECT.

**I.** — Grandgent's Grammar and Composition; De Amicis, La Vita Militare; Maffei, Merope; Dante, Divina Commedia (Scartazzini's edition). *Tuesday*, *Thursday*, *and Saturday at* 10.45. PROFESSOR FAY.

## LATIN.

### PROFESSOR DEARBORN.

The work in this department is arranged and conducted with a view to giving students (1) a good knowledge of the Latin language and of a portion of its literature, and, as a result of careful and critical translation of Latin, greater facility and accuracy in the use of English; (2) an acquaintance with the early history of Rome, the fundamental principles of the Roman constitution, and the important features of the public and private life of the people, acquired partly by reading Latin authors, partly by special study of these subjects; and (3) the mental training by which a man is better equipped for any pursuit in life, and the habit of independent study and research which is essential to all true scholarship.

In the early part of the work the forms and construction of the language are carefully studied. Translation, both oral and written, into appropriate English, holds an important place in all the work of the department. Reading without translation is practised to some extent. Considerable attention is given to the comparative etymology of Latin, Greek, and English. Lectures are given on the history of the Latin language and literature. The advanced work is especially adapted to the needs and attainments of those who elect the study, and more attention is given to the subject-matter and to the style and spirit of the authors read.

The work in Roman history and archæology is carried on by means of recitations, illustrated lectures, and private investigations by the students, the results of which are presented in brief essays, read and criticised before the class.

### SUBJECTS.

**1.** — Livy; Cicero, Cato Major; Horace; Antiquities and Legendary History of Rome, with illustrated lectures; lectures on the History of the Latin Language and Literature. *Tuesday*, *Thursday*, *and Saturday at* 10.45. PROFESSOR DEARBORN.

Latin 1 is introductory to all later subjects, and will be taken by those choosing Latin as a prescribed language.

**2.** — Horace; Cicero, Tusculan Disputations; Tacitus, Germania and Agricola. *Monday*, *Wednesday*, *and Friday at* 11.45.

PROFESSOR DEARBORN.

**3.** — Juvenal; Pliny; Plautus; Classic Archæology and Art. *Tuesday*, *Thursday*, *and Saturday at* 9.45. PROFESSOR DEARBORN.

**4.** — Cicero; Terence; Catullus; Quintilian. *Tuesday*, *Thursday*, *and Saturday at* 8.45. PROFESSOR DEARBORN.

**5.** — Livy; Cicero; Latin Composition. *Wednesday and Friday at* 10.45. PROFESSOR DEARBORN.

Latin 5 is supplementary to Latin 1, and when elected should be taken simultaneously with it in the Freshman year.

**6.** — Cicero (Brutus and Second Philippic); Plautus or Terence; Lucretius (Books I.–III.); Tacitus (Dialogue or Annals); Comparative Grammar of Greek and Latin (King and Cookson or Henry); History of the Latin Language and Literature. *Three hours a week.*

PROFESSOR DEARBORN.

This subject is for graduate students.

## GREEK.

### Professors Schneider and Graves.

The aim of the department is to treat the Greek language not merely as a disciplinary instrument, but as a factor in the broadest and most liberal culture. Throughout the course the practice of reading at sight is encouraged, special effort being made to develop such facility that the student may resort with pleasure to the masterpieces of the Greek language, and find in them the delights and inspirations of a noble literature. To this end also considerable attention is paid to the style and literary characteristics of the authors read. The relations of Greek to the Latin, German, and English languages are discussed, and the course is shaped to develop, discipline, and enrich the linguistic resources of the student. Reading without translation is encouraged from the beginning. Incidentally, studies are made of the customs and daily life of the people. Discussion relative to the laws, philosophy, and religion of the Greeks is introduced, and some attempt is made to exhibit the indebtedness of modern civilization to Hellenism.

#### SUBJECTS.

**1.** — Elementary. Goodwin's Grammar; White's Beginner's Book; Xenophon (Anabasis or Hellenica); Homer (Iliad I–III); Plato (Apology and Crito); Woodruff's Greek Composition. *Double subject. Monday, Wednesday, and Friday at* 11.45, *and Tuesday, Thursday, and Saturday at* 9.45. Professor Graves.

Greek 1 is intended for students entering without Greek and wishing to begin the study of that language. It is assumed that their previous training in linguistic studies will enable them to proceed rapidly and accomplish in one year all the work usually done in preparation for college.

**2.** — Xenophon (Memorabilia or Cyropœdia); Herodotus (Books VI and VII); Homer (Phæacian Episode of the Odyssey); Sophocles (Antigone); Greek Composition. *Monday, Wednesday, and Friday at* 2. Professor Graves.

Greek 2 is the course for students entering with Greek. Particular attention is given to the syntax of the language and to the development of the dialects. Incidentally, study is made of the customs and daily life of the people. The course is supplemented by lectures on Greek literature, Hellenic antiquities, and on the literary characteristics of the authors read.

[**3.** — Lysias (Selections); Antiphon (Herodes and Choreutes); Demosthenes (On the Crown); Euripides (Medea); Æschylus (Seven against Thebes); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. PROFESSOR GRAVES.]

**4.** — Andocides (Mysteries and On the Return); Isocrates (Panegyric); Æschines (Against Ctesiphon); Euripides (Hippolytus); Æschylus (Prometheus Bound); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. PROFESSOR GRAVES.

Greek 3 and 4 are offered in alternate years and are open to those who have taken Greek 2. It is intended in either case to give the first term to the critical study of the orators and the second to the dramatists. Rhythm and metre are studied in connection with the dramatists, and modes and tenses with the orators. At suitable points, lectures on the laws, oratory, theatre, and religion of the Greeks are given.

**5.** — Theocritus (Idylls and Epigrams); Pindar (Olympian and Pythian Odes); Tyler's Selections from Greek Lyrics; reading at sight in the Odyssey. *Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR SCHNEIDER.

Greek 5 is open to those who have completed Greek 3 or 4. Much attention is paid to the development of Greek lyric poetry, and the various theories of rhythm and metre are discussed. Lectures on appropriate topics are given in connection with the work.

**6.** — Plato (Symposium); Aristotle (Ethics, Books I–IV, or Politics); reading at sight in Herodotus and Lucian. *Monday, Wednesday and Friday at* 2. PROFESSOR SCHNEIDER.

Greek 6 is open to those who have completed Greek 3 or 4. A critical study of the authors read is supplemented by a general survey of Greek philosophy.

**7.** — Topics in Greek History: reading at sight in Homer and Euripides; Greek Composition. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR GRAVES.

Greek 7 may be taken by any one who has had the equivalent of Greek 1. It is especially suited to Freshmen intending to elect Greek as their major.

**8.** — Demosthenes (Private, Hellenic, Olynthiac, and Philippic Orations); Sophocles (Plays and Fragments); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30. PROFESSOR GRAVES.

[**9.** — Study of the Sources of Greek History; critical reading of

Herodotus, Thucydides, Xenophon, and Diodorus Siculus; Greek Composition. *Wednesday and Friday from* 4 *to* 5.30.
PROFESSOR GRAVES.]

[**10.** — Plato (Gorgias, Phaedo, Republic I–V); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30. PROFESSOR GRAVES.]

Greek 8, 9, and 10 are rotated, so that each is given every third year, 8 being the subject for 1895–96. These subjects are intended for those wishing to pursue graduate work in Classical Philology. They may, however, on permission from the instructor, be taken by any one who has completed Greek 3 or 4. Independent work is encouraged throughout, and theses are read and criticised by the students. Lectures are given in 8 on legal antiquities, in 9 on Greek history, and in 10 on the life, works, style, and philosophy of Plato.

## HEBREW.

### PROFESSOR CURTIS.

Two subjects, each occupying two hours a week for a year, are offered in Hebrew, enabling the student to obtain a knowledge of the rudiments of the language, and, if desired, to pursue it further and obtain some knowledge of the literature. It will be noticed that these subjects are given in alternate years.

### SUBJECTS.

**1.** — Rudiments of Hebrew Grammar; Vocabulary and Word Studies; Reading of Easy Prose, with Criticism. *Tuesday and Thursday at* 3. PROFESSOR CURTIS.

[**2.** — Advanced Hebrew; Readings from Ancient, Middle, and Late Hebrew; Discussion of the Critical Questions involved. *Tuesday and Thursday at* 3. PROFESSOR CURTIS.]

## PHILOSOPHY.

### PROFESSOR SHIPMAN.

Together with historical and critical work in Philosophy, this department includes Logic, Psychology, and Ethics. Students choosing it as their major department will be expected to take at least three term hours in each of these subjects, and to make up three years of continuous work. Half subjects are offered for the most part, and the preparatory subjects are so far complete that any of them may be taken by students not intending to pursue special studies in the department. The second term in Psychology does not pre-suppose the first, but if both are taken, the order given is advised. The first subject in Logic includes an elementary consideration of inductive reasoning.

The work in Ethics embraces the study of ethical theory and practice. In addition to recitations from the text-book, students conduct their own investigations, under the direction of the teacher, and embody the results of the same in theses. Considerable time is spent in the discussion of ethical principles, and in the comparison and criticism of modern ethical doctrines.

The study of the Philosophy of Religion begins with a classification of the great questions in Theology, thus giving an outline history of doctrines, with emphasis on their logical relations. The next step is the testing of the chief doctrines by known scientific facts. Lastly, the results are arranged on scientific principles. The method includes library work, with references to the writings of the leaders of theological thought in all historic times.

Lectures and criticisms in the class-room supplement the students' personal investigations.

### SUBJECTS.

**1.** — The History of Philosophy. First half-year: the pre-Socratic Greeks; Socrates, Plato, and Aristotle; the Stoics and Epicureans. Second half-year: the Period of Enlightenment from Locke to the death of Lessing (1689–1781); German Philosophy from Kant to Hegel (1781–1820), with special attention to Kant and Schopenhauer. Lectures, theses, and wide reading. *Monday, Wednesday, and Friday at* 3. MR. CUSHMAN.

This course is an introduction to Philosophy and is designed for beginners. It is extremely advisable that the student should understand the literature of Philosophy before taking any other course in constructive or critical Philosophy.

**2.** — Psychology. Manifestations of Mind through Consciousness. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*). PROFESSOR SHIPMAN.

**3.** — Physical Psychology. *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*). PROFESSOR SHIPMAN.

The first subject presents Psychology in its historical relations, studies the manifestations of mind through consciousness, in the manifold products of individual and collective activity, and prepares the way for Philosophy. The second deals with the methods and results of recent psychological investigation, with Psychology as a branch of Physics.

**4.** — Logic, especially Deductive, with an elementary consideration of fallacies. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). PROFESSOR SHIPMAN.

**5.** — Logic (advanced course), especially Inductive. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*). PROFESSOR SHIPMAN.

Much attention is paid to practical exercises. Philosophy 4 is open only to such students as have satisfactorily completed 3. In it fallacies are discussed at much greater length and recent modifications of logical doctrine are examined.

**6.** — Ethics. Elementary principles; discussion of ethical theories; practical questions. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*). PROFESSOR SHIPMAN.

**7.** — Practical Ethics. Contemporary Problems, Education, Charities, Temperance, Socialism. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). PROFESSOR TOUSEY.

Philosophy 6 follows 5 in natural sequence, as the application of ethical theory to the practical questions of the day, but the practical side is not neglected in 5.

**8.** — The Philosophy of Religion. *Monday, Wednesday, and Friday at* 3 (*first half-year*). PROFESSOR KNIGHT.

[**9.** — Metaphysics: the fundamental problems of Philosophy considered constructively; problems of knowledge, nature, self and self-consciousness, theism, teleology, freedom, and causation; realism and idealism. Lectures, theses, and critical discussion in the class of the text of Deussen's Elements of Metaphysics and Bradley's Appearance and Reality. *Monday, Wednesday, and Friday at* 2 (*first half-year*). Will be given in 1896–97. MR. CUSHMAN.]

[**10.** — Descartes, Leibnitz, and Spinoza. Critical and expository study of the authors, lectures, readings of the text, theses. MR. CUSHMAN.]

[**11.** — Kant and Schopenhauer; review of the Romance Period. Critical study of the authors, lectures, readings, and theses. Open to students who have taken a half-year, at least, in Philosophy 1. *Monday, Wednesday, and Friday at* 2 (*second half-year*). MR. CUSHMAN.]

[**12.** — English Philosophy from Hobbes to Hume. Method of work similar to 10 and 11. Open to students who have taken a half-year, at least, of Philosophy 7. *Monday, Wednesday, and Friday at* 2 (*second half-year*). MR. CUSHMAN.]

Philosophy 11 and 12 are given in alternate years. One of these subjects will be given in 1896–97.

## HISTORY.

### MR. START.

The department for the present year offers a course in mediæval history, with introductory work intended to give the student a general knowledge of the significance, sources, and methods of history, and of the large facts in the early development of civilization and their connection with later history. The later history of Europe is the subject of special study, and all of this work leads up to a careful study of the history and constitutional growth of the United States. The essential unity of history is kept constantly in view, as well as the bearing of the experience of the past upon the conditions and problems of to-day, especially in our own country. Much of the instruction is by lectures, but independent work on the part of the student is sought through the study of special topics, references for parallel readings, the preparation of theses, and by general class discussions. The aim is not so much the accumulation of a great mass of facts, as an adequate comprehension of the meaning of significant historical events, and of the method to be employed in collating and using them.

Major students in History should acquire a working knowledge of German and French, at least, among the languages. Psychology and Political Science are important collaterals. Knowledge of Literature, Philosophy, and of the natural sciences, especially of Biology, is also of great value, and in some cases requisite for successful historical investigation.

#### SUBJECTS.

**1.**—Mediæval Europe; historical method; introductory study of the beginnings of History. Lectures, topical work, and theses. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*).
MR. START.

History 1 is introductory to all succeeding subjects in History, and must be taken by students wishing to go on with the latter. It is intended to give a general knowledge of the nature and progress of civilization through the Middle Ages, and the means by which it is studied. Complete in itself, it is the foundation for special study of limited periods. It is open for election by all students who have passed the entrance examinations in History. It will not be accepted for an advanced degree.

**2.** — European History since 1648. The political revolution and formation of modern states. Topical study, lectures, and theses. Open to students who have completed History 1. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). MR. START.

[**4.** — American Colonial History. Spain, France, and England in the New World. The formation and social and political life of the colonies. Lectures, parallel readings, theses, and topical work. Open to students who have taken History 1. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. START.]

**5.** — Political and Constitutional History of the United States. The Revolution, formation of the Union, development of the Nation under the Constitution. Lectures, study of sources, and literature, theses, and topical work. Open to students who have taken History 1 and 4. *Monday, Wednesday, and Friday at* 11.45. MR. START.

History 4 and 5 form a connected study of the history of our own country from the opening of the New World to the present time. While this is not made a necessary condition, it is desirable that they be preceded by History 2. History 4 will not be a prerequisite for this subject in 1896–97.

**6.** — The Comparative History of Religions. Egypt, Babylon, Nineveh; Parseeism, Hinduism, Buddhism, Confucianism, Mohammedanism; with a study of the civilizations represented by these religions. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*). PROFESSOR KNIGHT.

**9.** — Seminary in American History. Research work with the sources. Open to major students in History who have completed twelve term hours of work in the department. *Full subject; meetings weekly or fortnightly, at the pleasure of the instructor.* MR. START.

In the seminary each student becomes an active historical investigator, examining the sources upon which history is based, and obtaining by personal experience an insight into the principles of research and criticism. Work of sufficient value done in the seminary will be preserved in the college library.

## POLITICAL SCIENCE.

### PRESIDENT CAPEN.

In this department are included Ancient and International Law and Economics. In the study of Ancient Law the object is, first, to determine the nature of primitive jural conceptions, and, as far as possible, to ascertain how they have arisen and on what they are founded; then, to trace the transformations which these conceptions have undergone, particularly in the Roman jurisprudence and the legal systems that have a Roman root. The effect which legal speculations and doctrines have had, not only upon modes of procedure, but upon civil institutions, political principles, social and domestic life, is carefully studied. International Law follows in the second term. So far as the time allows, a treatment of the subject that is at once broad and practical is sought.

The subject of Political Economy begins with an historical survey, the object being to trace the growth of economic ideas from the beginning, and to note the phases they have assumed among different peoples in the modern world. Then follows a consideration of the fundamental principles of economics. Students are assigned the task of making practical application of principles to the solution of present economic problems. Time is given to subjects of immediate and living interest, such as the labor question, socialism, the tenure of land, taxation, and finance.

Special work will be arranged in connection with some of the problems of government for those who take Political Science as a major subject, and who have completed 1, 2, and 3.

#### SUBJECTS.

**1.**—Political Economy. Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, lectures, and independent investigation dealing with the History of Economics, Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Tuesday, Thursday, and Saturday at* 8.45.

PRESIDENT CAPEN.

**2.** — Ancient Law; Roman Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*).
PRESIDENT CAPEN.

**3.** — International Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*).
PRESIDENT CAPEN.

**4.** — Special work in problems of Government for students electing Political Science as a major department. PRESIDENT CAPEN.

## MATHEMATICS.

### PROFESSOR BROWN.

The study of Mathematics is required through the first year. The branches taught are: Algebra, through the subjects included in most college text-books previous to the theory of equations; Solid and Spherical Geometry; Plane Trigonometry, with its applications. Two objects are kept constantly in view: first, to acquire and hold certain mathematical facts for future use; secondly and mainly, to train the mathematical faculties so that the student may acquire the ability to deduce mathematical truths from those previously established. The class-room work of the instructor is a combination of lectures with questioning of the students to ascertain that the points presented are duly comprehended.

An opportunity to continue the study of Algebra and also a course in Determinants are offered at the middle of the first year. Plane Analytic Geometry is offered as an elective for the first half of the second year. This study may be continued with higher plane curves and Geometry of three dimensions during the second half of the second year. Differential and Integral Calculus is required for three half-years in the Engineering courses, and the subject is open as an elective to any student who has taken Plane Analytic Geometry.

### SUBJECTS.

**1.** — Bowser's College Algebra; Solid Geometry; Bowser's Plane Trigonometry. Applications of Plane Trigonometry. *Monday, Wednesday, and Friday at* 8.45 (Division I). MR. WREN. *At* 9.45 (Division II). PROFESSOR BROWN.

**2.** — Theory of Equations and Elements of Determinants. *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*). PROFESSOR BROWN.

**3.** — Bowser's Analytic Geometry. Open to students who have taken 1. *Monday, Wednesday, and Friday at* 11.45 (*first half-year*). PROFESSOR BROWN or MR. WREN.

[See Engineering Courses.]

**4.** — Spherical Trigonometry; Projections of Triangles; use of Richards's Manual with the sphere. Open to students who have had 1. (*First half-year.*) PROFESSOR BROWN.

**5.** — Higher Plane Curves; Analytic Geometry of Three Dimensions. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*). PROFESSOR BROWN.

**6.** — Differential and Integral Calculus, Osborne's. *Three hours a week* (*second half-year*). MR. WREN.

[See Engineering Courses.]

**7.** — Differential and Integral Calculus continued. *Two hours a week* (*first half-year.*) MR. WREN.

[See Engineering Courses.]

**8.** — Differential and Integral Calculus (advanced course). *Two hours a week* (*second half-year*). PROFESSOR BROWN or MR. WREN.

**9.** — Weld's Theory of Determinants; Hanus's Elements of Determinants. *Three hours a week* (*first half-year*). MR. WREN.

**10.** — Differential Equations. *Two hours a week* (*first half-year*). PROFESSOR BROWN.

[See Engineering Courses.]

**11.** — Method of Least Squares. Comstock and Merriman. *Two hours a week* (*second half-year*). PROFESSOR BROWN.

[*For further subjects essentially mathematical, see subjects* 1 *and* 4 *in the department of Drawing, and subjects* 1, 3, *and* 8 *in the department of Civil and Mechanical Engineering.*]

## PHYSICS.

### PROFESSOR DOLBEAR.

The work in Physics begins with a consideration of General Physics, this being the subject to be taken by those electing Physics for their prescribed work in science, and the introductory subject for major students in Physics. A text-book is used, critical comments and much additional material are given, and frequent lectures are given with experiments. The aim is to present the science of Physics not as a series of detached subjects, but as a consistent body of doctrine in which mechanical principles hold throughout, and from which all the various phenomena are deducible. Hence in each branch there are frequent returns to these first principles. The rapid development of electrical science having quite outstripped text-books, this subject is treated wholly by lectures.

An elective course is offered of about twenty-five lectures upon the relations of Physics to other branches of natural science, introducing the doctrine of the conservation of energy as applicable to all. After this follows a more extended consideration of the fundamental questions in Physics. Spencer's First Principles is read, and its subject-matter thoroughly discussed.

In the Physical Laboratory beginners are given Stewart and Gee's Practical Physics, first volume, for a guide. They work for the most part independently, and each pursues a given subject till satisfactory results are obtained. Glazebrook and Shaw's Practical Physics is followed on the subjects of sound, heat, and light; Pickering's Manipulation and Kohlrausch's Measurements being also used to a limited extent. In electricity and magnetism Stewart and Gee's second volume is mainly followed, supplemented, in the case of engineering students, by parts of Gray's Absolute Measurements and Kempe's Testing. In all laboratory work each student records methods and results in a suitable note book, and is encouraged to do a few things well rather than to go carelessly over a larger ground. Students who are preparing themselves to become teachers of Physics have an opportunity to perform most of the experiments needed for illustrating elementary work.

### SUBJECTS.

**1.** — General Physics. Lectures, recitations, and experiments. To be taken by students choosing Physics for their prescribed science subject, and introductory to other subjects in Physics. *Monday, Wednesday, and Friday at* 10.45. PROFESSOR DOLBEAR.

**2.** — Electricity and Magnetism; Heat; Light; work in Laboratory. *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR DOLBEAR.

**3.** — Advanced Studies in Electricity, Heat, and Light, with experimental work in each. *Monday, Wednesday, and Friday at* 9.45.
PROFESSOR DOLBEAR.

**4.** — Physical Laboratory. Mechanics, Sound, Heat, and Light. *Six hours a week (second half-year).* Mr. Myrick.

**5.** — Electricity: Theory of Measurements. *Three hours a week.* Electrical Laboratory: Simple Measurements and Tests. *Two hours a week.* Mr. Myrick.

**6.** — Relation of Physics to Sociology. Lectures. *Tuesday and Thursday at 2 (first half-year).* Professor Dolbear.

**7.** — Spencer's First Principles. *Tuesday and Thursday at 2 (second half-year).* Professor Dolbear.

## CHEMISTRY.

Professor Michael and Assistant Professor Durkee.

The work in the department begins with Chemistry 1, which is open for election by the students of the courses in Liberal Arts, and is required of engineering students in their second year. The instruction is by means of lectures, recitations, and laboratory work. The lectures, illustrated by numerous experiments, are intended to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including a brief account of the chemistry of the carbon compounds and the principal technical processes. One half of the time devoted to this subject is given to practical work in the laboratory, and the student will have an opportunity to verify some of the chemical theories, and to become familiar with substances and their chemical behavior. The lectures are supplemented by recitations and written examinations. An opportunity to continue the study of theoretical and inorganic chemistry is afforded by subjects 11 and 13. In the first course the current theoretical views, and the chemistry of the rarer elements and compounds will be considered and discussed. Facility is given to those who wish to supplement the above course of lectures with laboratory practice by taking subject 13, when the student will undertake some of the more difficult inorganic experiments and preparations; thus obtaining greater experience in chemical experimentation. The last two subjects may be taken as graduate work.

The instruction in Qualitative Analysis extends through a year, and consists of two subjects (2 and 3) taught in part by lectures and recitations, but mainly by work in the laboratory. During the advanced course the student is required to analyze correctly a large number of mixtures and minerals. Blow-pipe Analysis (subject 6) is intended to teach the use of the blow-pipe in chemistry, together with the tests that are of special value in determinative mineralogy. Quantitative Analysis is mainly taught by laboratory practice, in order that the student may attain that skill in manipulation which is necessary for this kind of work. In subject 4 enough work is given to enable the student to analyze the simpler salts and minerals, and in the advanced subject 5, complete analyses of more complicated minerals, ores, commercial and food products, etc., are required. The analysis of organic substances is included in subject 5. Gas analysis (subject 9) is taught by lectures and laboratory work, principally in the use of technical methods. Assaying (subject 7) is adapted to familiarize the student with the practical methods of sampling and assaying gold, silver, and lead ores. The above subjects cover a comprehensive study of analytical chemistry, and are intended to give the student such a thorough theoretical and practical knowledge as to prepare him for analytical work of any description. A course of lectures in Metallurgy (subject 8), with recitations, is offered, which is intended to give the student a general idea of fuels, ore dressing, refractory building materials, and the more important technical methods of extracting iron, copper, and silver.

The study of Organic Chemistry begins with a course of lectures, illustrated by experiments and recitations, which cover the general principles, methods, and description of the most important organic compounds. For those who wish to specialize in this science an opportunity is given by subject 12, in which by lectures the underlying theories of organic chemistry will be fully discussed and the relations between them and organic reactions explained. The laboratory practice in organic chemistry (subject 14) may be begun at the same time as subject 10 and continued with 12. It includes the methods for determining the physical properties and molecular weights of organic substances and the preparation of compounds. When taken in connection with subject 12, one or more of the most important chemical researches will be repeated by the student. The subjects 12 and 14 may be taken as graduate work.

Subjects 11, 12, 13, and 14 are especially designed to lead up to research work in chemistry, and students who have taken them, with subject 5, are prepared to enter on this line of advanced work. Ample facilities are offered for the successful prosecution of investigations in inorganic and organic chemistry.

Two laboratory hours are equivalent to one term hour, except in the special course in Chemistry, for the degree of Bachelor of Science, in which three hours of work in the laboratory count as one term hour. The quantitative and organic laboratories are open from nine to five o'clock daily, Saturday afternoons excepted.

### SUBJECTS.

**1.** — General Chemistry. Lectures, recitations, and laboratory work. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**2.** — Qualitative Analysis. Basic Analysis. *Lectures, laboratory work, and recitations on Tuesday and Thursday from* 2 *to* 5 (*first half-year*). ASSISTANT PROFESSOR DURKEE.

**3.** — Qualitative Analysis. Acids; Analysis of Salts, Commercial and Natural Products. *Lectures, laboratory work, and recitations on Tuesday and Thursday from* 2 *to* 5 (*second half-year*). ASSISTANT PROFESSOR DURKEE.

**4.** — Quantitative Analysis. Gravimetric and Volumetric Analysis; Analysis of Minerals. *Lectures and laboratory work. Three hours a week.* DR. HIGBEE.

**5.** — Quantitative Analysis (advanced course). Analysis of Minerals, Ores, Water, Food Products, Organic Analysis, etc. *Laboratory work. Three hours a week.* DR. HIGBEE.

**6.** — Blow-pipe Analysis. Open to students who have taken 1, 2, and 3. *Lectures and Laboratory work. Three hours a week* (*second half-year*). ASSISTANT PROFESSOR DURKEE.

**7.** — Fire Assay. Open to students who have taken 1, 2, 3, and 4. *Three hours a week* (*second half-year*). MR. LEIGHTON.

**8.** — Metallurgy. Lectures and recitations. Open to students who have taken 1. *Three hours a week (second half-year).*
ASSISTANT PROFESSOR DURKEE.

**9.** — Gas Analysis. Lectures and laboratory work. Open to students who have taken 1, 2, 3, and 4. *Three hours a week (first half-year).* DR. HIGBEE.

**10.** — Organic Chemistry. Lectures and recitations. Open to students who have taken 1. *Three hours a week (second half-year).*
DR. BUCHER.

**11.** — Theoretical and Inorganic Chemistry (advanced course). Lectures and recitations. Open to students who have taken 1, 2, 3, and 4. *Three hours a week (first half-year).* PROFESSOR MICHAEL.

**12.** — Organic Chemistry (advanced course). Lectures and recitations. Open to students who have taken 1, 2, 3, 4, and 6. *Three hours a week (second half-year).* PROFESSOR MICHAEL.

**13.** — Laboratory work in Inorganic Preparations. *Hours to be arranged by the instructors.* PROFESSOR MICHAEL and DR. BUCHER.

**14.** — Laboratory work in Organic Analysis; Determination of Physical Constants and Molecular Weights; Preparation of Organic Compounds. *Hours to be arranged by the instructors.*
PROFESSOR MICHAEL and DR. BUCHER.

**15.** — Original Investigations in Chemistry. *Hours to be arranged by the instructor.* PROFESSOR MICHAEL.

**16.** — Readings in German Chemical Works and Journals. Open to students who have taken German 1 and 2. *Two hours a week (first half-year).* DR. BUCHER.

**17.** — Discussions on chemical subjects and recent investigations. *One hour a week.*

## BIOLOGY.

### PROFESSOR KINGSLEY.

The work in Biology is differentiated in two lines: one for those desiring a general knowledge of the subject, and one for those who need more thorough work. The first line embraces Biology 1, and may, upon election, be followed by subjects 4, 5, 6, and 7. The other course begins with Biology 2 and 3 and is required of all major students as well as of those candidates for the degree of S. B. in the Biology, Medical Preparatory, and General Science courses. These are followed by subjects 5 to 9, subject 8 involving the preparation of a dissertation. Instruction is given by lectures and by laboratory work, the object being to impart the scientific method rather than a large number of unimportant facts. Provision is also made for more extended study and for original investigation, and students will be encouraged to continue their work in this department by means of research on special problems.

The equipment of the department is good. There are three well lighted laboratories furnished with every requisite for good work, including microscopes, microtomes, reagents, etc., as well as abundant material for illustration and dissection. One of the laboratories is devoted to elementary biology, one to advanced undergraduate work, and one to graduate students. There is also a department library containing 786 volumes and 1,400 pamphlets, while the college library contains the proceedings of many learned societies, both American and foreign. Besides these, proximity to Boston and Cambridge gives easy access to library facilities unequalled in any other part of America.

### SUBJECTS.

**1.** — General Biology. Lectures, *Tuesday and Thursday at* 11.45; laboratory work, *Tuesday and Thursday from* 2 *to* 4.

PROFESSOR KINGSLEY.

This subject is intended for those who elect their required year of science work in this department and for candidates for the degree of S. B. in chemistry.

**2.** — General Biology. Lectures, *Monday and Friday at* 11.45; laboratory work, *Tuesday and Thursday from* 2 *to* 4.

PROFESSOR KINGSLEY.

This course and its continuation, No. 3, is required of all students electing Biology as their major, and also of candidates for the degree of S. B. in the General Science, Biological, or Medical Preparatory courses.

**3.** — General Biology. Lectures, *Monday and Friday at* 4; laboratory work (4 hours), *Monday*, *Wednesday*, *and Friday from* 2 *to* 4.

PROFESSOR KINGSLEY.

**4.** — Elementary Physiology. Lectures, demonstrations, and recitations. *Tuesday*, *Thursday*, *and Saturday at* 8.45 (*first half-year*).

PROFESSOR KINGSLEY.

The students in the Medical Preparatory course take this subject at the Medical School.

Subjects 1 to 4 will not be accepted as work for advanced degrees.

**5.** — Histology; a study of the normal tissues of the vertebrates, including microscopical technique. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.*
PROFESSOR KINGSLEY.

**6.** — Embryology. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.* PROFESSOR KINGSLEY.

**7.** — The History of Zoölogy. One lecture a week for the first half-year. PROFESSOR KINGSLEY.

This course of lectures, given in the evening, is open to the public, and is intended to outline the history of our knowledge of the animal kingdom, and to include the elements of the various theories connected with the organic world. Attendance on this course does not count toward a degree.

**8.** — Special Work. Six hours of laboratory work for the year in the investigation of some special problem. PROFESSOR KINGSLEY.

**9.** — General Morphology. Three lectures each week upon the anatomy, physiology, and embryology of selected groups, with discussion of special problems. Open only to advanced students. *Hours to be arranged.* PROFESSOR KINGSLEY.

Subjects 5 to 9 are intended for both graduates and undergraduates.

There is required from all students taking Laboratory Courses, a laboratory fee of $2.00 per term, payable to the Bursar of the College in advance.

## GEOLOGY.

PROFESSOR MARSHALL.

The regular work in Geology is preceded by that in Mineralogy, given during the first half-year. The instruction is given by lectures and practical work in the mineralogical laboratory, which is furnished with the apparatus needed for the qualitative determination of minerals and the quantitative analysis of the ores of the precious metals. A good collection of minerals systematically arranged in wall-cases, is accessible to the student for practical use, while a much larger collection of finer specimens on exhibition in the Museum may also be consulted.

The course in Descriptive Geology given during the second half-year presupposes a knowledge of Mineralogy, and is given by means of text-books and lectures, illustrated by models, charts, maps, and drawings upon the blackboard. Soon after beginning, practical work in Lithology is taken up, by which the student becomes familiar with the constituents of the common rocks. A spectroscope, a lithological microscope, and rock-sectioning apparatus are provided for a more thorough examination of rocks and minerals. The subject of Palæontology is taken up in the latter part of the year, and illustrated by a systematic collection of fossils in the Museum. Excursions to various localities in the neighborhood are offered the students, where the more common geological phenomena can be profitably studied *in situ*.

### SUBJECTS.

**1.** — Mineralogy; Blow-pipe Analysis. *Tuesday*, *Thursday*, *and Saturday at* 9.45 (*first half-year*). PROFESSOR MARSHALL.

**2.** — Geology, Lithology, and Palæontology. Lectures, recitations, and laboratory work. *Tuesday*, *Thursday*, *and Saturday at* 9.45 (*second half-year*). PROFESSOR MARSHALL.

## ASTRONOMY.

**1.** — Recitations and Lectures, chiefly on Physical and Descriptive Astronomy, with special attention to the later discoveries, and their interpretation as bearing upon the history of the earth. *Tuesday and Thursday at* 11.45 (*first half-year*). PROFESSOR DOLBEAR.

## DRAWING.

PROFESSOR ANTHONY.

The object of the studies pursued in this department is threefold: first, a development of the theory of technical drawing; second, the acquirement of precision and rapidity in the execution of the work; third, a practical application of these principles to the fluent expression of mechanical ideas by means of graphic language. Practice in the attainment of the first is acquired by Freehand and Geometric Drawing and the study of Descriptive Geometry. By means of progressive problems, in which nothing in the nature of a copy is permitted, the student is advanced to the consideration of point, line, and surface from a purely analytic standpoint. The instruction in Descriptive Geometry is given by means of lectures and recitations, accompanied by frequent examinations in the freehand and instrumental construction of the problems. Rapidity of work being attained only through precision, drawings are required to be executed with the greatest possible care and neatness. The theory and execution of a drawing having been mastered, together with the elements of kinematics, the student is directed to make such applications of these principles to the illustration of mechanism as shall enable him graphically to express his ideas in the most simple and direct manner. The machine drawings are made by such systems as would be required in any well-conducted drafting-room, and the most modern methods are employed in the execution of the work and in the forms of graphic expression that may be used. A progressive course in design is pursued preparatory to and in connection with thesis work.

### SUBJECTS.

**1.** — Descriptive Geometry. Lectures, recitations, and drawing. *Four hours a week (second half-year).*
PROFESSOR ANTHONY, MR. DANIELS.

**2.** — Technical Sketching and Lettering. *Two hours a week (first half-year).* PROFESSOR ANTHONY, MR. DANIELS.

**3.** — Mechanical Drawing. (See Engineering Courses.) *Three hours a week for the year.* MR. DANIELS.

**4.** — Elements of Mechanism. *Two hours a week (first half-year).*
MR. SANBORN.

**5.** — Machine Drawing; Gearing, Elements of Design. *Two hours a week for the year.* PROFESSOR ANTHONY.

**6.** — Topographical Drawing, with Field Work, Chain, Compass, Level, and Transit. *Three hours a week for the year.*
MR. DANIELS.

## CIVIL AND MECHANICAL ENGINEERING.

PROFESSOR BRAY.

There are offered in this department such selected subjects from the Engineering Courses as may be profitably pursued by students in the courses in Liberal Arts, who have taken the necessary preliminary work in Mathematics, and who may desire to shape their work with reference to pursuing study in Engineering after graduation. Such students will also find subjects adapted to their plans in the departments of Mathematics, Physics, Chemistry, and Drawing. Fuller details of the work in Engineering will be found in the statement of the full Engineering Courses. For all the subjects given below, Algebra, Geometry, and Trigonometry are an indispensable preparation.

### SUBJECTS.

**1.** — Land Surveying. Lectures, recitations, and field practice. Plotting and calculating. *Two hours a week (first half-year).*
MR. DANIELS.

**2.** — Topography. Lectures, recitations, drawing, and field practice. *Two hours a week (first half-year).* MR. DANIELS.

This subject must be preceded by 1.

**3.** — Elementary Mechanics. *Three hours a week (second half-year).*
MR. SANBORN.

**4.** — City and Mining Surveying. Recitations, field and office work. *Three hours a week (second half-year).* MR. DANIELS.

**5.** — Railroad Surveying. Field practice and office work; drawing and calculating. *Two hours a week (first half-year).* MR. DANIELS.

Subjects 3 and 4 must be preceded by 1 and 2.

**6.** — Steam Enginery; practice in the management of engines and boilers, valve-setting, etc. *Three hours a week (first half-year).*
MR. SANBORN.

**7.** — Thermo-dynamics. *Three hours a week (second half-year).*
MR. SANBORN.

**8.** — Applied Mechanics. *Three hours a week (second and first half-years).* PROFESSOR BRAY.

Subjects 6 and 7 must be preceded by Calculus.

**9.** — Steam Engineering. Mechanics of the Steam Engine. Dimensions and proportions of engines and boilers; valve gears; engine testing; preparation of designs and specifications. *Five hours a week (first half-year); three hours a week (second half-year).*
PROFESSOR BRAY.

This must be preceded by Mechanical Drawing and Engineering 5, 6, and 7.

**10.** — Roads and Railroads, to be taken with 4. *Three hours a week (first half-year); two hours a week (second half-year).* PROFESSOR BRAY.

**11.** — Hydraulics. *Three hours a week (second half-year).*
PROFESSOR BRAY.

**12.** — Bridges and Roofs. *Two hours a week (second half-year).*
MR. DANIELS.

**13.** — Masonry Construction. *Three hours a week (second half-year).*
PROFESSOR BRAY.

Subjects 10, 11, and 12, must be preceded by 7.

**14.** — Marine Engineering. PROFESSOR BRAY.

This subject is open as an elective to those students who are prepared for it and may be taken by regular students in Mechanical Engineering who wish to specialize in their Senior year. Students in Marine Engineering are required to spend their summer vacations in the engine department of a steam vessel, and on the completion of their course and one year's service in the engine department of a steam vessel, may receive United States licenses to serve as engineers on steam vessels.

## ELECTRICAL ENGINEERING.

PROFESSOR HOOPER.

To students in the College of Liberal Arts who may desire to elect advanced work in Electricity, the following subjects are open: Subjects 1, 2, and 3 require a good working knowledge of Algebra and Trigonometry, while 4 requires some acquaintance with Calculus and Differential Equations.

### SUBJECTS.

**1.** — Dynamo Electric Machinery. Recitations and lectures. *Three hours a week (second half-year).* PROFESSOR HOOPER.

**2.** — Electrical Calculations. *Two hours a week (second half-year).*
PROFESSOR HOOPER.

**3.** — Electrical Laboratory (advanced course). *Three hours a week for the year.* PROFESSOR HOOPER.

**4.** — Electricity (advanced work). Alternating currents. *Four hours a week (first half-year); three hours a week (second half-year).*
PROFESSOR HOOPER.

## MUSIC.

### Professor Lewis.

The department offers opportunities to gain a knowledge of musical history and of the principles of composition, as a basis for practical work in music or in musical criticism. The courses in Harmony and in General History of Music may well be taken by students who wish to cultivate their appreciation of music, but have no intention of preparing themselves for professional work in the art.

#### SUBJECTS.

**1.** — Harmony. Lectures and practical work, based on Jadassohn's Manual of Harmony. Collateral reading concerning the lives of Bach, Händel, Haydn, Mozart, and Beethoven. Three hours a week for the year. *Tuesday at* 3, *Thursday from* 2 *to* 4. Professor Lewis.

An elementary knowledge of piano playing is required of those who take this subject.

[**2.** — Counterpoint, Simple and Double. Lectures and practical work, based on the manuals of Jadassohn, Bridge, and others. Collateral reading concerning the lives of Schubert, Schumann, Mendelssohn, Wagner, and Brahms. *Three hours a week for the year.*]

[Will be given in 1896–97.]

A thorough theoretical knowledge of harmony, and much facility in the harmonization of basses and choral melodies, are required of those who take this course. A full equivalent of Music 1 must have been done by students who wish to begin their college work with Music 2.

[**3.** — Fugue, Canon, Musical Form, and the Elements of Orchestration. Lectures and practical work, with various manuals for class use and reference. *Three hours a week for the year.*]

[Will be given in 1897–98.]

Students who elect this subject must have attained grade A or B in Music 2, and must have given evidence of talent in melodic invention. Those who are admitted to the course are required to attend regularly during the year the public rehearsals or concerts of the Boston Symphony Orchestra, and at least eight concerts of chamber-music, as prescribed by the Instructor.

**4.** — General History of Music from the Earliest Times to the Present Day, with especial attention to the period since the death of Palestrina. Lectures, with various treatises for reference. *Monday, Wednesday, and Friday, at* 10.45. PROFESSOR LEWIS.

[**5.** — Special Studies in Musical History, in Musical Criticism, or in the development of Musical Form.]

[**Will be given in 1897–98.**]

An equivalent of the work of Music 4 and an ability to read with facility German and French are required of students who elect this subject. The same requirement of concert attendance as that under Music 3 exists also for Music 5. The course may be given in lectures, or may consist of individual work of students under the direction of the Instructor.

[**6.** — The Phenomena of Sound in relation to music and musical instruments. Lectures and experiments. One hour a week for the second half-year. PROFESSOR DOLBEAR.]

[**Will be given in 1896–97.**]

The first half-year's work in Physics 1 must have been done by those who elect this subject.

## PHYSICAL TRAINING.

### MR. DURKEE.

Regular exercise in the gymnasium is required three hours a week of men students for the two years following entrance, from the middle of November to the middle of March. The work in physical training is optional during the remaining years of the course. The kind of exercise prescribed for each man depends on his physical condition, as determined by careful medical examination, measurements, and strength tests. The special exercises of each student are directed by the instructor; the general exercises are in classes. The class work consists of free movements, exercises with wands and light dumb-bells, and on the parallel bars, vaulting-bar, and vaulting-horse. It is the intention in all cases to make the exercises of such a character that the weakest as well as the strongest person can perform them with profit.

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| **Tuesday, Thursday, Saturday.** (Even number groups.) | II.—8.45. | IV.—9.45. | VI.—10.45. | VIII.—11.45. |
| | English 4 (i, Tu. and Thurs.).<br>Oratory 1 (Tuesday).<br>Oratory 3 (ii, Thursday).<br>English Literature 3 (*a*) (ii).<br>English Literature 3 (*c*) (i).<br>German 2.<br>French 2.<br>Latin 4.<br>Greek 7.<br>Political Science 1.<br>Biology 4 (i). | German 1.<br>French 1.<br>Latin 3.<br>Greek 1.<br>Greek 5.<br>Political Science 2 (i).<br>Political Science 3 (ii).<br>Geology 1 (i).<br>Geology 2 (ii). | Italian 1.<br>Latin 1.<br>Philosophy 4 (ii).<br>Philosophy 5 (i).<br>Philosophy 6 (i).<br>Philosophy 7 (ii).<br>History 1 (i).<br>History 2 (ii).<br>Physics 2. | German 4.<br>Greek 3.<br>Greek 4.<br>Philosophy 2 (i).<br>Philosophy 3 (ii).<br>History 6 (i).<br>Mathematics 2 (ii).<br>Biology 1 (lectures Tues. and Thurs.).<br>Astronomy 1 (i, Tues. and Thurs.). |
| **Tuesday and Thursday Afternoons.** (Even number groups.) | X.—2.00. | XII.—3.00. | XIV.—4.00. | |
| | English 1 (Tuesday).<br>Oratory 2 (*a*) (Tuesday).<br>Oratory 2 (*b*) (Thursday).<br>Physics 6 (i).<br>Physics 7 (ii).<br>Chemistry 2 (i).<br>Chemistry 3 (ii).<br>Biology, 1, 2 (laboratory).<br>Music 1 (Thursday). | Hebrew 1 or 2.<br>Chemistry 2 (i).<br>Chemistry 3 (ii).<br>Biology 1, 2 (laboratory).<br>Music 1. | Chemistry 2 (i).<br>Chemistry 3 (ii). | |

# Tabular View of Program Groups.

The arrangement of such subjects as have fixed hours assigned to them is shown in the subjoined table. Hours for laboratory work and for subjects not here indicated are to be arranged with the instructors. Subjects in the same group cannot be taken simultaneously.

The groups assigned to Monday, Wednesday, and Friday are indicated by the odd number Roman numerals; those assigned to Tuesday, Thursday, and Saturday, by the even number Roman numerals.

The small Roman numerals (i) and (ii), following the names of half subjects, indicate the half year in which they are given.

| | | | | |
|---|---|---|---|---|
| y, Wednesday, Friday.<br>(Odd number groups.) | I.—8.45. | III.—9.45. | V.—10.45. | VII.—11.45 |
| | French 3.<br>French 4.<br>Mathematics 1 (first division). | English Literature 3 (*a*) (i).<br>English Literature 3 (*b*) (ii).<br>English Literature 4 (*a*) (i).<br>English Literature 4 (*c*) (ii).<br>German 3.<br>Mathematics 1 (second division).<br>Physics 3. | English 2 (i).<br>English 3 (ii).<br>English Literature 1 ( Monday).<br>English Literature 6 (*b*) (Wednesday).<br>German 6.<br>Latin 5 (Wednesday and Friday).<br>Physics 1.<br>Music 4. | English 6 (i).<br>English 7 (ii).<br>German 5.<br>Latin 2.<br>Greek 1.<br>History 5 (i).<br>Mathematics 3 (i).<br>Mathematics 5 (ii).<br>Biology 2 (lectures Mon. and Fri.). |
| | IX.—2.00. | XI.—3.00. | XIII.—4.00. | |
| | | | English Literature 5 (Friday). | |

# Courses in Science.

The courses outlined below, in General Science, Biology, Chemistry, and Medical Preparatory studies, lead to the degree of Bachelor of Science, are entered through Entrance Examination Group V, and are intended for graduates of general high schools, who wish to prepare themselves for specialized scientific work. Like the engineering courses, they are placed upon a technical basis, and far less latitude is allowed the student in the choice of subjects than in the courses in Arts and Philosophy, his election being made when the course is chosen. The programs of these courses are given below. Fuller statements of the different subjects will be found under the corresponding numbers in the statements of the Departments of Instruction, pages 51 to 82.

## COURSE IN GENERAL SCIENCE.

### Freshman Year.

*English* (as in Engineering Courses).
*German* 1 or 2.
*French* 2 or 1.
*Physics* 1.
*Biology* 2.
*Drawing*.
*Physical Training*.

### Sophomore Year.

*English* 2 and 3.
*German* 2, or *German* 3 (first half-year), and *Chemical* or *Biological German* (second half-year).
*French* 2 (if German 3 is taken).
*Biology* 3.
*Physics* 2 (first half-year) and 4 (second half-year).
*Mathematics* 1 (taken this year by those entering with French).
*Physical Training*.

### Junior Year.

*German* 3 (first half-year and *Chemical* or *Biological German* second half-year).
*Chemistry* 1.
*Mathematics* 1 (for those entering with German).
*Descriptive Geometry* (second half-year).
*Physiology* (first half-year).
*Embryology* (second half-year).
*Shop Work* (first half-year).
*Mechanics* (second half-year).
*Elective, seven hours.*

### Senior Year.

*Chemistry* 3.
*Chemistry* 10 (second half-year).
*Philosophy* 2 and 3.
*Geology* 1 and 2.
*Systematic Biology* (second half-year).
*Surveying* (first half-year).
*Elective, three hours.*

## SPECIAL COURSE IN BIOLOGY.

### Freshman Year.

As in the course in General Science.

### Sophomore Year.

*English* 2 (first half-year) and 3 (second half-year).
*German* 2, or *German* 3 (first half-year) and *Biological German* (second half-year).
*French* 2, or *elective six hours*, for those entering with French.
*Biology* 3.
*Chemistry* 1.
*Physical Training.*

### Junior Year.

*German* 3 (first half-year) and *Biological German* (second half-year).
*Physiology* (first half-year).
*Histology* (first half-year).
*Embryology* (second half-year).
*Chemistry* 3.
*Chemistry* 10 (second half-year).
*Elective, eight hours* (*fourteen* for those entering with German).

### Senior Year.

*Geology* 1 and 2.
*General Morphology.*
*Human Anatomy* at Tufts Medical School.
*Special research* in Biology, including *thesis*, twelve hours.
*Elective, five hours.*

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## SPECIAL COURSE IN CHEMISTRY.

### Freshman Year.

*General Inorganic Chemistry.*
*Mathematics* 1.
*German* 1 or 2.
*English* (as in Engineering Courses).
*Physics* 1.
*Drawing.*
*Physical Training.*

### Sophomore Year.

*Qualitative* and *Quantitative Analysis.*
*Organic Chemistry* (second half-year).
*Physical Laboratory* (second half-year).
*English* 2 and 3.
*German* 2, or *French* 1.
*Blow-pipe Analysis* (first half-year).
*Chemical German.*
*Physical Training.*

### Junior Year.

*Advanced Inorganic Chemistry* (first half-year).
*Advanced Organic Chemistry* (second half-year).
*Quantitative Analysis.*
*Biology* 1.
*Physiology* (first half-year).
*Fire Assay* (second half-year).
*Metallurgy* (first half-year).
*Advanced Laboratory.*
*Logic* (second half-year).

### Senior Year.

*Applied Chemistry.*
*Gas Analysis* (first half-year).
*Political Science* 1.
*Research* and *thesis*, five hours (first half-year); nine hours (second half-year).

## MEDICAL PREPARATORY COURSE.

### Freshman Year.

As in the Course in General Science.

### Sophomore Year.

As in the Special Course in Biology.

### Junior Year.

*Chemistry* 3.
*Chemistry* 10 (second half-year).
*Embryology* (second half-year).
*Philosophy* 2 and 3.
*Shop Work* (second half-year).
*German* 3 (first half-year); *Biological German* (second half-year).
*Elective*, *six hours* (*twelve hours* for those entering with German).

### Senior Year.

*General Morphology*.
*Political Science* 1.
*Ethics*.
*Human Anatomy*, *Histology*, and *Physiology* at Tufts Medical School.
*Elective*, *six hours*.

# Engineering Courses.

Three courses in Engineering are provided, each occupying four years, and leading to the degree of Bachelor of Science. The course in Electrical Engineering leads to the degree of Bachelor of Science in Electrical Engineering, which is granted after the satisfactory completion of the work prescribed. The same degree in Civil or Mechanical Engineering is given on similar conditions to students who have pursued the course in Civil or Mechanical Engineering. It is believed that four years, spent mainly upon technical subjects, yet providing opportunity for such language study as will enable the student to become familiar with foreign books of scientific value, will furnish a solid foundation for advanced theoretical attainment and professional skill.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain either of the degrees mentioned above upon the completion of one year's graduate study.

MODERN LANGUAGES. — An elementary knowledge of French or German (see pages 40 and 42) is required of all candidates for admission to the Engineering Department. While each student will be assigned, upon entrance, to such class as his proficiency warrants, it is in general expected that those who present merely an elementary requirement will continue through the Freshman year the study of the language presented. At the end of this period, students who have acquired the ability to utilize for research works in the language hitherto studied may begin the study of the alternate language; but no one will be permitted to begin the study of German later than the Sophomore year, except by special permission, and with the understanding that the requirement of nine term-hours on the subject is to be met by extra work. The courses in French and German are, in general, similar to those described on pages 55 to 57 (general statement).

Students in the three branches of Engineering follow the same plan of work for the first two years.

## FRESHMAN YEAR.

### First Term.

**Mathematics.** — Advanced Algebra; Spherical Geometry; Plane Trigonometry. *Six hours a week.* MR. MYRICK and MR. WREN.

**Mechanical Drawing.** — Geometric Drawing; Orthographic Projection. *Three hours a week.* MR. DANIELS.

**Freehand Drawing.** — Lettering and Technical Sketching. *Two hours a week.* PROFESSOR ANTHONY and MR. DANIELS.

**Shop Work.** — Carpentry; Turning; Pattern-Making. *Two hours a week.* MR. FURBISH.

**Rhetoric.** — Elementary Rhetoric and Composition. *Three hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Spherical Trigonometry. *Two hours a week.* MR. MYRICK and MR. WREN.

**Mechanics.** — Lectures on Elementary Mechanics, with problems. *Three hours a week.* MR. SANBORN.

**Mechanical Drawing.** — Orthographic, Isometric, and Oblique Projection; Screw Threads; Bolts and Nuts; Tracing and Blue-printing. *Three hours a week.* MR. DANIELS.

**Descriptive Geometry.** — Lectures, recitations, and drawing. *Four hours a week.* PROFESSOR ANTHONY and MR. DANIELS.

**Shop Work.** — Pattern-Making; Moulding. *One hour a week.* MR. FURBISH.

**Composition.** — *Two hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

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* See remarks on Modern Languages, page 87.

## SOPHOMORE YEAR.

### First Term.

**Mathematics.** — Analytic Geometry. *Three hours a week.* MR. WREN.

**Drawing.** — Machine Drawing. *Two hours a week.* MR. SANBORN.

**Elements of Mechanism.** — *Two hours a week.* MR. SANBORN.

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Chemistry.** — Inorganic Chemistry, with recitations, lectures, and laboratory work. *Three hours a week.*
ASSISTANT PROFESSOR DURKEE.

**Surveying.** — Recitations and lectures. Field practice; plotting and calculating. *Two hours a week.* MR. DANIELS.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.*
MR. SANBORN.

**Drawing.** — Kinematics. *Two hours a week.* PROFESSOR ANTHONY.

**Shop Work.** — Blacksmithing; Forging of Iron and Steel. *One hour a week.* MR. FURBISH.

**Physics.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Physical Laboratory.** — Mechanics; Sound, Heat, and Light. *Three hours a week.* MR. MYRICK.

**Rhetoric.** — *Three hours a week.* MR. WHITTEMORE.

**Chemistry.** — General and laboratory. *Three hours a week.*
ASSISTANT PROFESSOR DURKEE.

**French or German.** — *Three hours a week.**

## ELECTRICAL ENGINEERING.

The aim of the course in this department is to fit men to deal intelligently with all electrical problems likely to be presented o the practical engineer. With this end in view, Mathematics and Drawing are pursued through nearly the entire course. Physics and Mechanics, both pure and applied, receive much attention, while more than half of the fourth year is devoted to the study of Electricity, by means of practical work in the electrical laboratory, together with recitations and lectures on the principles involved. The purely electrical work extends over the Junior and Senior years of the course; the Junior year being devoted to the more elementary theory and the practice of the simpler tests and measurements; the Senior year to the more advanced theory and the practice of the more complex tests and measurements.

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* See remarks on Modern Languages, page 87.

In the electrical laboratory each student is required to complete a fixed program of work. In the Junior year this consists of the work indicated in Stewart and Gee's Practical Physics, Vol. II. In the Senior year it includes among other things: the photometry of arc and incandescent lamps; the magnetic properties of the various irons; insulation and conductivity tests; efficiencies, characteristic curves, and magnetic leakage of dynamos, motors, and transformers; efficiency, capacity, etc., of accumulators; preparation of thesis.

The laboratory is well equipped with testing instruments, including the various types of ammeters, voltmeters, reflecting galvanometers, resistance boxes; standards of electromotive force, resistance, and capacity; Thomson's standard balances; electro-dynamometer, etc. The more delicate instruments are provided with substantial brick piers to prevent vibration.

The dynamo room is equipped with a Sturtevant engine of twenty-five horse-power and six dynamos, and several motors, including a pair of railway motors; and is provided with counter-shafts, dynamometers, tachometer, etc. A sixty-thousand watt hour storage battery furnishes ample power for all work at any time when the dynamos are not running.

The electrical workshop possesses a fine outfit of machine tools, including planer, shaper, drill, universal milling machine, engine lathes, speed lathes, turret lathe, and grinder. Here is constructed by students much of the apparatus in daily use in the laboratory.

Graduates of this course may obtain the degree of Electrical Engineer after satisfying certain conditions. (See page 122).

The plan of work for the Junior and Senior years is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Advanced Machine Drawing. *Three hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Three hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice in management of engines and boilers; adjusting parts; valve setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.* *

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* — MR. WREN.

**Drawing.** — Elements of Mechanism. *One hour a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

Thompson's Dynamo Electric Machinery; Dynamo Plans and Calculations. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.* MR. MYRICK.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

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* See remarks on Modern Languages, page 87.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Machine Design. *Two hours a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure; Torsion; Long Columns; Arches; Special Problems. *Three hours a week.* PROFESSOR BRAY.

**Electricity.** — Alternating Currents; Bedell and Crehore, Fleming. Recitations. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Management of Electrical Machinery; Testing dynamos, motors, transformers, and accumulators; testing lines, conductors, and lamps. *Three hours a week.* PROFESSOR HOOPER.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.* PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Machine Design and Thesis Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Alternating Currents, Fleming; Theory of Electricity. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Special Investigations. PROFESSOR HOOPER.

**Hydraulic Laboratory.** — Measuring discharge through orifices, pipes, and over weirs; Efficiency of Motors; Discharge in Rivers; Determination of Co-efficients. PROFESSOR BRAY.

**Telegraph and Telephone.** — Lectures. *Two hours a week.* PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## MECHANICAL ENGINEERING.

It is the aim of this department to so instruct the student in the various subjects that he will be enabled to apply scientific principles to the design of a machine or to the proper arrangement of any mechanical plant. In the earlier part of his studies the work common to all engineering courses embraces the careful study of mathematics, physics, and chemistry, which have important bearing upon his subsequent study of the properties of materials used by the engineer. Elementary drawing also occupies a prominent place in the course and is followed by descriptive geometry. The latter is further developed in its application to practical problems and to the systematic study of mechanism.

Steam Enginery is taken by all engineers; it includes the study of the principles involved in the generation and application of power, the management of a steam engine and boiler, the making of steam joints, setting of valves, and so forth. The course in Thermodynamics is begun after the student has become well versed in the methods of the calculus, the principles being developed by mathematical treatment. It consists of the mechanical theory of heat, properties of gases, saturated and superheated steam, theory of the injector, and laws of the flow of steam. The subject is taught by text-book, lectures, and laboratory. Steam Engineering is taken by Seniors. It includes the study of the steam engine, compound and multiple expansion, and of steam boilers of various types; the dimensions for developing a required power; the material and sizes of parts requisite for strength and endurance; the effect and balance of reciprocating parts, and the various kinds of valve motions. Practice is given in engine and boiler testing and a design with working drawings is required of each student.

In this course students who so desire may make a special study of Marine Engineering, which includes the principles of the propelling instrument and powering of vessels. Students in Marine Engineering will spend their vacations in the engine room of a steam vessel.

Students in Mechanical Engineering pursue a very complete course of shop work in the new shops of the college, beginning with carpentry and wood turning, and followed by moulding, pattern making, blacksmithing, and machine work.

The plan for the last two years of the course in Mechanical Engineering is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Advanced Machine Drawing. *Three hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and Lectures. *Three hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice in Management of Engines and Boilers; Adjusting Parts; Valve Setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.* *

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Elements of Mechanism. *One hour a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and lectures. *Two hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Thermodynamics.** — Principles of Mechanical Theory of Heat. *Three hours a week.* MR. SANBORN.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.* MR. MYRICK.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

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* See remarks on Modern Languages, page 87.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Design. *Two hours a week.*
PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure, Torsion: Long Columns; Arches; Special Problems. *Three hours a week.*
PROFESSOR BRAY.

**Steam Engineering.** — Mechanics of the Steam Engine; Dimensions and Proportions of Engines and Boilers; Studies of different Types. *Three hours a week.* PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs; in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.*
PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Machine Designs and Thesis Drawing. *Two hours a week.*
PROFESSOR ANTHONY.

**Mechanical Laboratory.** — Testing Engines and Boilers; Efficiency of Machines; Power required to Drive Machines; Calibrating Instruments. PROFESSOR BRAY.

**Hydraulic Laboratory.** — Measuring Discharge through Orifices, Pipes, and over Weirs; Efficiency of Motors; Discharge in Rivers; Determination of Co-efficients. PROFESSOR BRAY.

**Steam Engineering.** — Efficiency of Engines and Boilers; Design of Engine for Given Power; Dimension of Parts; Study of Valve Gears; Specifications. *Three hours a week.* PROFESSOR BRAY.

**Telegraph and Telephone.** — Lectures. *Two hours a week.*
PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## CIVIL ENGINEERING.

The course of study in this department has been arranged with reference to its disciplinary and educational value, as well as to the general and technical knowledge which it imparts, and has constantly in view the training of competent designers and constructors. Instruction is given by means of text-books and lectures, laboratory work, and practice in the drafting-room and in the field.

In Surveying, the use and adjustment of instruments are taught by work in the field, so that students become familiar with the methods of land, topographical, city, railroad, and mine surveying. The work in Plane Surveying is taken in the first term of the Sophomore year and is for all Engineers. It consists of recitations, field-work, and drafting-room practice in plotting from field notes, calculating, laying-out, and dividing land. This is followed for students in this course by Topography, which embraces extended field practice with transit, stadia, level, and plane-table, and pen and colored topographical drawing, and modelling. A course of hydrographical, railroad, and city surveying follows Topography, and is designed to teach the student accuracy with rapidity in the instrumental work necessary for carrying out extended engineering enterprises. It embraces the preliminary survey, the location, and the staking out for construction.

The work in the drafting-room begins with plane geometrical problems, freehand drawing, and lettering; followed by mechanical drawing, problems in descriptive geometry, shades and shadows, plotting from field notes of actual surveys, topographical drawing, and map-making. The production of finished plans is required; also the drawing of details of engineering structures and machines necessary for the construction of railroads, sewer systems, steam and electric plants.

The work in Road Engineering includes study in the classroom of the principles governing the economical location of railroads and highways, as well as consideration of the cost of their construction, maintenance, and operation. The field-work embraces the survey and location of a line of railroad, and includes setting slope-stakes, locating turnouts, culverts, and bridges, with the preparation of specifications and estimates.

In Descriptive Geometry the instruction is given by means of text-books and lectures, illustrated by diagrams and models. The problems are worked out upon the blackboard, and many original questions are added, to make the student thoroughly familiar with this branch of mathematics.

Instruction in the Steam Engine is given by means of text-books, lectures, drawings, and practice with engines and boilers. Frequent reference is made to modern examples of engines and boilers of various kinds. Students have practice in applying the steam indicator for the determination of the power developed by the engine.

In Applied Mechanics the student is taught to design structures and machines, beginning with the study of forces, centre of gravity, moment of inertia, determination of stresses in frames and trusses, including investigation of the strength and elasticity of materials, theoretically in the class-room, and experimentally in the testing laboratory. A ready knowledge of mathematics is essential in this department, since frequent use is made of analytic geometry, trigonometry, and the calculus.

The subject of Construction is taught by recitations, lectures, laboratory work, and by the study of approved examples and reports of engineers and inspectors of work under construction. Investigation is made of the characteristic properties, strength, and durability of natural and artificial building materials. The appliances and machinery required in the construction of walls, dams, piers and abutments, arches and tunnels, are considered, and the student is made familiar with the methods of constructing foundations on land and under water, and the uses of piles of various kinds.

The work in Hydraulics embraces theoretical and experimental or applied hydraulics. Numerous problems are solved by the student, requiring the application of formulæ to cases of frequent occurrence in practice. A study of the laws governing the pressure and flow of water in pipes over weirs, through tubes, etc., is followed by numerous problems, requiring, on the part of the students, the application of formulæ to cases of frequent occurrence in practice. The student is taught the use of instruments in measuring the flow in rivers, and has laboratory practice with weirs, tanks, orifices, etc., and in measuring efficiency of hydraulic motors. A study is made of the published reports of engineers upon the experimental determination of the flow in conduits and sewers.

The instruction in Bridge Designing is based upon the analytic and graphic computation of stresses, as taken up in Applied Mechanics. The principles therein developed through the study of the strength and elasticity of materials are applied to computation for determining the several parts of highway and railroad bridges.

Students in Civil Engineering are required to take workshop practice in carpentry, wood turning, pattern making, moulding, and blacksmithing.

Graduates of this course may obtain the degree of Civil Engineer on complying with the requirements defined in the statement of the Graduate Department, page 122. The plan of the last two years of the course is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Topography.** — Topographical Surveying; Pen and Colored Topographical Drawing. Field and office work. *Two hours a week.* MR. DANIELS.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Two hours a week.* MR. MYRICK.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. MYRICK.

**Steam Enginery.** — Practice and Management of Engines and Boilers; Adjusting Parts; Valve Setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.**

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* See remarks on Modern Languages, page 87.

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moment of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Masonry Construction.** — Preparation and Use of Materials; Foundations; Dams; Walls; Abutments; Arches. *Three hours a week.* PROFESSOR BRAY.

**Surveying.** — City and Mining Surveying. Text-Book with field practice and office work. *Three hours a week.* MR. DANIELS.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.* PROFESSOR BROWN.

**Applied Mechanics.** — Strength of Materials; Flexure, Torsion; Long Columns, Arches; Special Problems. *Three hours a week.* PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.* PROFESSOR BRAY.

**Roads and Railroads.** — Laying-out, Construction, and Maintenance of Highways. Method of Conducting Preliminary Survey and Trial Location for a Railroad. *Three hours a week.* PROFESSOR BRAY.

**Surveying.** — Practice in Railroad Surveying; Locating Curves, Switches, and Frogs; Laying out Mechanical Structures; Staking out for Construction. *Two hours a week.* MR. DANIELS.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Hydraulic Laboratory.** — Measuring Discharges through Orifices, Pipes, and over Weirs; Efficiency of Motors; Discharge in Rivers; Determination of Co-efficients. PROFESSOR BRAY.

**Railroads.** — Economic Theory of Railroad Location. *Two hours a week.* PROFESSOR BRAY.

**Bridges and Roofs.** — Theory and Practice of Designing. *Two hours a week.* MR. DANIELS.

**Telegraph and Telephone.** — Lectures. *Two hours a week.* PROFESSOR DOLBEAR.

**Preparation of Thesis.**

# TABULAR VIEW OF ENGINEERING COURSES.

## FRESHMAN YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per Week. | Must be preceded by. |
|---|---|---|---|
| | FIRST TERM. | | |
| 1 | Mathematics | 6 | — |
| 2 | Mechanical Drawing | 3 | — |
| 3 | Freehand Drawing | 2 | — |
| 4 | Carpentry and Turning | 2 | — |
| 5 | French or German | 3 | — |
| 6 | Rhetoric | 3 | — |
| | SECOND TERM. | | |
| 7 | Mathematics | 2 | 1 |
| 8 | Mechanical Drawing | 3 | 2 |
| 9 | Descriptive Geometry | 4 | 1, 2 |
| 10 | Moulding and Pattern Making | 1 | 4 |
| 11 | French or German | 3 | 5 |
| 12 | Rhetoric | 2 | 6 |
| 13 | Mechanics | 3 | 7* |

* May be taken at the same time, but cannot be taken before 7.

## SOPHOMORE YEAR.

| | | | |
|---|---|---|---|
| | FIRST TERM. | | |
| 14 | Analytical Geometry | 3 | 7 |
| 15 | Elements of Mechanism | 2 | 8, 9 |
| 16 | Machine Drawing | 2 | 8, 3 |
| 18 | French or German | 3 | 11 |
| 19 | Physics | 3 | 13 |
| 20 | Chemistry, General and Laboratory | 3 | — |
| 21 | Surveying | 2 | 7 |
| | SECOND TERM. | | |
| 22 | Calculus | 3 | 14 |
| 23 | Drawing | 2 | 15, 16 |
| 24 | Forging | 2 | — |
| 25 | French or German | 3 | 18 |
| 26 | Rhetoric | 3 | 12 |
| 27 | Physics, Lectures | 3 | 19 |
| 28 | Physics, Laboratory | 3 | 19 |
| 29 | Chemistry, General and Laboratory | 3 | 20 |

## JUNIOR YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 30 | Calculus | 3 | E. M. C. | 22 | — |
| 31 | Drawing, Machine | 3 | E. M. | 23 | — |
| 32 | Topography | 2 | C. | 21 | — |
| 33 | French or German | 3 | E. M. C. | 25 | — |
| 34 | Electricity, Recitations | 3 | E. M. C. | 14, 27, 28 | — |
| 35 | Electricity, Laboratory | 2 | E. M. C. | 14, 27, 28 | — |
| 36 | Steam Enginery | 3 | E. M. C. | 27 | — |
| 37 | Qualitative Analysis | 3 | E. M. C. | 29 | — |
| 38 | English Literature | 1 | E. M. C. | — | — |
| | SECOND TERM. | | | | |
| 39 | Calculus | 2 | E. M. C. | 30 | — |
| 40 | Vise, and Machine Work | 2 | E. M. | — | — |
| 41 | Applied Mechanics, Recitations | 3 | E. M. C. | 30 | 39, 42 |
| 42 | Applied Mechanics, Laboratory | 1 | E. M. C. | — | 41 |
| 43 | Electricity, Recitations | 2 | E. M. | 34, 35 | — |
| 44 | Dynamo Electric Machinery | 3 | E. | 14, 27 | — |
| 45 | Physical Laboratory | 2 | E. M. C. | 34, 35 | 43 |
| 46 | Thermo-Dynamics | 3 | M. | 30, 36 | 39 |
| 47 | English Literature | 1 | E. M. C. | 38 | — |
| 48 | Masonry Construction | 3 | C. | 39, 41 | 39, 41 |
| 49 | Surveying | 3 | C. | 32 | — |
| | Drawing — Design | 1 | E. M. | 31 | — |

*E. — Electrical. M. — Mechanical. C. — Civil.

## SENIOR YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 50 | Differential Equations | 2 | E. M. C. | 39 | — |
| 51 | Drawing — Design | 2 | E. M. C. | 31, 41 | — |
| 52 | Applied Mechanics | 3 | E. M. C. | 41, 42 | — |
| 53 | Electricity, Recitations | 4 | E. | 43, 45 | 50 |
| 54 | Electricity, Laboratory | 3 | E. | 43, 44, 45 | 53 |
| 55 | Steam Engineering | 3 | M. | 31, 36, 39, 46 | 52 |
| 56 | Political Economy | 3 | E. M. C. | — | — |
| 57 | Hydraulics | 3 | E. M. C. | — | 52 |
| 58 | Roads and Railroads | 3 | C. | 48 | 60 |
| 59 | English Composition | 1 | E. M. C. | 26 | — |
| 60 | Surveying | 2 | C. | 32 | 58 |
| | SECOND TERM. | | | | |
| 61 | Least Squares | 2 | E. M. C. | 30 | — |
| 62 | Drawing — Design | 2 | E. M. C. | 51 | — |
| 63 | Electricity | 3 | E. | 53 | — |
| 64 | Laboratory, Electrical | 4 | E. | 54 | 63 |
| 65 | Laboratory, Mechanical | 4 | M. | — | 68 |
| 66 | Laboratory, Hydraulic | – | E. M. C. | 57 | — |
| 67 | Telegraph and Telephone | 2 | E. M. C. | 27 | — |
| 68 | Steam Engineering | 3 | M. | 55 | — |
| 69 | Railroads | 2 | C. | 39, 52, 58 | — |
| 70 | Bridges and Roofs | 2 | C. | 52 | — |
| 71 | Thesis | – | E. M. C. | — | — |

* E. — Electrical. M. — Mechanical. C. — Civil.

# Buildings and Equipment.

## BUILDINGS.

The college buildings are: Ballou Hall, containing recitation rooms and the physical laboratory; Barnum Museum, containing the natural history collections and the biological and geological laboratories and lecture room; Goddard Chapel; Goddard Gymnasium; the Library; the Chemical Building, containing the chemical laboratories and lecture room; three dormitories, — East Hall, West Hall, Dean Hall; the Commons Building, containing the commons dining-hall, the post-office, and rooms for students; and Metcalf Hall, for women students. The Bromfield-Pearson school building is available for the technical courses of the College. Two buildings, Miner Hall and Paige Hall, are devoted to the use of the Divinity School.

## LIBRARY.

The Library contains thirty-two thousand six hundred bound volumes, and about fifteen thousand pamphlets. It includes, in a separate room, the private library (numbering fourteen hundred and forty volumes) of the late Rev. William H. Ryder, D. D., of Chicago. The College regularly receives over two hundred periodicals. In the Library building a reading-room, maintained by the students, supplies the daily and weekly papers. Provision for the purchase of books is chiefly from the income of the Joy Library Fund, now amounting to twenty thousand dollars. The average annual increase by donation and purchase, for the last five years, has been about twelve hundred volumes. The Library is open to all members of the College every day in the week, except Sunday, from 8.45 A. M. to 12.45 P. M., and from 2 to 5 P. M.

In addition to the general library, there is in Miner Hall the collection of the Universalist Historical Society (thirty-five hundred volumes and several thousand pamphlets), to which, on application, students have free access; and in the Barnum Museum the department library of Natural History, numbering eight hundred volumes and about fourteen hundred pamphlets.

## BARNUM MUSEUM.

The Barnum Museum of Natural History was built in 1883–84 by the late P. T. Barnum, who also gave the college a fund for its maintenance, and later, by bequest, gave funds for the erection of two wings to the central building. One of these wings has just been erected. In addition to laboratory rooms, it affords space for the display of the mineralogical and geological collections.

The College is also indebted to Mr. Barnum for the larger portion of its zoölogical collection. This serves to illustrate all groups of the animal kingdom and is especially rich in skeletons and mounted skins of mammals. Besides the more common forms, it contains many rare and interesting species, as Hatteria, Polypterus, Ceratodus, Protopterus, Cestracion, Amphioxus, Peripatus, and Pentacrinus, the whole being well adapted for the purposes of instruction. During the past year a large series of skeletons of the lower vertebrates, as well as numbers of the Naples Station Invertebrates, have been placed on exhibition.

The botanical collection consists of an herbarium containing a representation of the flora of New England, besides many specimens from Europe and the Southern and Western States. The geological collection contains representatives of the various types of rocks, as well as of fossils from all formations. Especially interesting are the nearly perfect skeletons of Ichthyosaurus and Plesiosaurus. The mineralogical collection, which has been assembled with great care, contains most of the species in very fine examples. Among those at present displayed are collections illustrating the chemical and physical properties of minerals.

The laboratories and lecture rooms of the department of Geology are in the main Museum building. The geological laboratory is provided with petrological microscopes, instruments for making rock sections, and other instruments; the mineralogical laboratory possesses the apparatus necessary for the determination of minerals, the analysis of ores, and assay work; the biological laboratories are in the newly-erected wing. The laboratory for elementary work is equipped with all necessary facilities, while the laboratories (two in number) for advanced and research work have all the necessary appliances and reagents for investigation in the lines of Anatomy, Histology, and Embryology.

The department library of Natural History, recently established in the Barnum Museum, contains those publications which bear directly upon the work of the department. It already embraces about eight hundred volumes and fourteen hundred pamphlets. Its future increase is in part provided for by the publications received in exchange for the "Tufts College Studies." Most of the series of periodicals are complete since 1870.

## GODDARD GYMNASIUM.

The Goddard Gymnasium is the gift of Mrs. Mary T. Goddard, and comprises, besides the main room for individual and class exercise, dressing-rooms, tub-baths, shower-baths, and lockers. The floor space unoccupied by apparatus is sufficient to accommodate a class of sixty men. The apparatus embraces that usually found in a well-equipped gymnasium, and includes fourteen Sargent developing machines. A running-track, one thirty-second of a mile in length, extends around the room. A full set of anthropometric instruments admits the accurate measurement of each student as preliminary to the assignment of suitable exercise.

## PHYSICAL LABORATORY.

The Physical Laboratory contains apparatus sufficient for illustrating all the general principles of Physics. The equipment includes a dividing engine, chronograph, cathetometer, sextant, microscope, saccharimeter, polariscope, spectroscope, spectrometer, optical bench, Rowland's gratings, and charts of the solar spectrum; also apparatus for projection with sunlight, lime and electric lights. In the field of electricity the equipment is especially good, including standards of resistance, of capacity, and of electro-motive force, besides a variety of instruments for accurate measurement.

## ELECTRICAL LABORATORY.

The Electrical Laboratory is supplied with the apparatus needed for testing and experimental purposes; among which may be mentioned ammeters, voltmeters, Wheatstone bridges, reflecting galvanometers, an electrometer, Sir William Thomson's standard balances, condensers, a large induction coil, and, in process of construction, an electro-dynamometer with coils a metre in diameter.

The dynamo-room contains a B. F. Sturtevant high-speed automatic engine of about twenty-five horse-power, belted to a line of shafting, the driven pulley being connected to the shafting through an Emerson power-scale reading to forty horse-power. From this shafting are belted an American and a Ball arc-light dynamo, a small alternator, a 15-kilowatt 110-volt generator, a pair of 110-volt 1,500-watt machines for the Library three-wire installation, several small motors, and a pair of railway motors. Three other machines are in process of construction. Steam power is furnished by a Whittier boiler.

Belonging to the dynamo-room are over twenty arc-lamps and a supply of electrical testing instruments. Adjacent is the battery-room, the main battery consisting of sixty of the large cells of the American Accumulator Company. These cells are in constant use for experimental and motor work, and for lighting. Connected with the laboratories is a workshop containing several lathes, a planer, shaper, drill, universal milling machine, turret lathe, and grinder, with an outfit of wood and metal working tools used in the construction and repair of apparatus. Most of the rough and some of the fine apparatus used in the dynamo-room and laboratories is manufactured in this room.

## CHEMICAL BUILDING.

The building of the department of Chemistry contains laboratories for General Inorganic, Organic, Analytical, and Metallurgical Chemistry, a large lecture room, library, and weighing room, and the private laboratories of the Professor in charge. The rooms are provided with all the modern laboratory conveniences and are well equipped with apparatus and chemicals.

## BROMFIELD-PEARSON BUILDING.

The Bromfield-Pearson building is provided with shops and drafting-rooms equipped for the instruction of classes in the Engineering courses in Carpentry, Pattern-making, Forging, Foundry and Machine Work, and Drawing. The complete equipment will be in readiness for the coming year and will include a forge shop and foundry, provided with the necessary forges and tools for a class of eighteen; pattern and machine shops, also equipped for classes of eighteen, each member being provided with a lathe, bench, and necessary tools. The drafting rooms are in the third story and separated from the noise and vibration of the shops. Abundant and uniform light is provided by means of large skylights on the northerly side.

## THE HALLS.

The Halls for the accommodation of students in the College of Letters are five in number. East, West, and Dean Halls, and the Commons Building, for men, are arranged with spacious and convenient rooms, in suites, are warmed by steam, lighted by gas, and have good modern plumbing. Metcalf Hall for women students is a gift to the College by Mr. Albert Metcalf, of Newton. It is built of buff brick and gray limestone, of simple and dignified architecture, and is equipped with every convenience. In the basement is a gymnasium, with bath-rooms connected. The first floor contains the rooms of the Matron, a reception-room, cloak-room, reading-room, and dining-room. The second and third floors have pleasant rooms for students, with ample bath and toilet conveniences on each floor. In the wing is the kitchen on the first floor, and servants' rooms on the second. Every safeguard for health and against fire is provided.

# General Information.

## RELIGIOUS OBSERVANCES.

Goddard Chapel, erected in 1882–83, is the gift of Mrs. Mary T. Goddard as a memorial of her husband, the late Thomas A. Goddard. Morning prayers are held daily, at which attendance is required. The care of the pulpit on Sundays devolves upon the President of the College; but variety and interest are given to the preaching services by frequent exchanges with neighboring clergymen. Attendance upon Sunday services is required; but permission is freely given to those who desire to attend elsewhere.

The Russell Lecture, established in accordance with a bequest of the late James Russell, of Arlington, is delivered before the Trustees, Faculty, and students, on the first Sunday of the college year, by either a clergyman or a layman, on a subject prescribed by the testator.

## TUFTS COLLEGE STUDIES.

This publication has been established as a means of presenting to the world the results of original work done in the different departments of the College. The numbers, which will be issued as material is ready, will be distributed to educational institutions and learned societies. The College desires to establish regular exchanges of these Studies with all publishing institutions at home and abroad. Correspondence regarding such exchanges should be addressed to the Librarian of Tufts College.

Three numbers have been issued, containing the following papers: "The Anterior Cranial Nerves of Pipa," by G. A. Arnold; "Ectodermic Origin of the Cartilages of the Head," by Julia B. Platt; "The Classification of the Arthropoda," by J. S. Kingsley; "Development of the Lungs of Spiders," by O. L. Simmons; "Development of the Wing in Sterna Wilsoni," by V. L. Leighton; "The Morphology and Classification of the Pauropoda, with Notes on the Morphology of the Diplopoda," by Frederick C. Kenyon.

The editorial board of Tufts College Studies, for the year 1896, is made up of the President of the College, and Professors Graves, Knight, Dolbear, and Kingsley.

## ADMISSION AND REGISTRATION.

The first examinations for admission to the College of Letters are held on the three days immediately following the annual Commencement in June, and the second examinations on three successive days in September, the last being the opening day of the college year. The program of the examinations may be found in the College Calendar, on pages 4 and 5. Entering students are required to register at the office of the Registrar before taking their examinations. Those entering on certificates must file the proper blanks (to be obtained of the Registrar of the College) at least one month before the opening of the college year. This is necessary for a thorough examination by the Faculty of the statements submitted, and any one who does not comply with the full requirements relating to certificates may be required to take the examinations as a condition of admission to the College.

Every student who has been a resident one year or more at the College is required to register at the office of the Registrar before noon of the opening day of the college year, and must then file, on blanks furnished for the purpose, two statements of his plan of study for the coming half-year, one to be kept on file by the Registrar, the other for the use of his major instructor. Hours for consultation of students with instructors will be publicly announced. No petitions concerning the courses of students in regular standing, except such as may be made in appeal from the decisions of major instructors, will be brought up for action by the Faculty; but all petitions relating to special courses and all appeals from decisions of major instructors must be before the Faculty on the evening of this day.

Instructors will post their class lists before 8.45 o'clock on the morning of the third day, and all students will be expected to meet their program appointments on and after that day. No student will be recognized as a member of a class whose name does not appear in the instructor's list of that class.

The same regulations are in force at mid-year, and apply to all students, the arrangements for the first three days of the second half-year being the same as those for the first three days of the first half-year.

Students entering Tufts College after pursuing study in any other college of equal rank are credited with the number of hours' work actually done towards the requirements of Tufts College, as certified by the proper authorities of the college from which the student comes. Such students must present satisfactory certificates showing the amount and character of work already accomplished, in order to obtain credit on the course of this College.

The Registrar's office hours during the summer vacation will be from 2 to 5 o'clock on Tuesday, Wednesday, Thursday, and Saturday afternoons.

## SPECIAL STUDENTS.

Students wishing to pursue a special course of study, who are not candidates for a degree, are subject to the following regulations: —

1. Every special student shall choose a major department, and shall make up his plan of study under the direction and subject to the approval of the major instructor.

2. The student shall satisfy the instructor in each subject included in the approved plan of study that he is able to pursue the work.

3. Every special student having less than fifteen program hours a week will be required to obtain seventy per cent in each subject; but those whose program hours number fifteen or more will be treated in the same manner as regular students.

4. A special student, on leaving college, shall be entitled to a cer-

tificate giving the per cent attained in each course pursued, and signed by the President and Registrar.

5. Special students in Electrical Engineering are required to pass examinations in General Physics, Trigonometry, and Elementary Calculus.

## TERMS AND VACATIONS.

The college year begins on the third Thursday in September, and ends at Commencement, the third Wednesday in June. The year is divided into two terms of eighteen weeks each. There are no college exercises during a recess of three days at Thanksgiving, two weeks at Christmas, and one week beginning on the Saturday before the first Thursday in April.

## EXPENSES.

The charge for instruction is *one hundred dollars* a year. Engineering students are charged *twenty dollars* a year extra.

Students in the laboratories are charged for certain materials used and for breakage. A fee of *two dollars* a term, payable in advance, is required of all students taking laboratory work in Biology. Students other than engineering who take shop work are charged extra.

A charge of *ten dollars* a year for the care of rooms is made to all persons rooming in any of the college buildings, except Paige Hall. Any damage done by students to college property is charged in the term bills.

Rooms in the college halls will be open for the occupancy of students on and after the Wednesday of the week preceding the opening of the college year.

Students not having a college residence will be charged *ten dollars* a year for rooms occupied between recitation hours.

Beginning with the college year 1894–95, every student who enters the College of Letters will be required to deposit with the Treasurer of the College either a bond with two satisfactory sureties for the sum of *one hundred and fifty dollars*, or the sum of *seventy-five dollars* in cash, which sum, with interest at the rate of four per cent yearly, will be returned when the student leaves the College, his term bills first being paid in full.

The charges for each year are contained in two bills, of which the first is made at the middle of the year, and is payable on the first day of March; the second is made immediately after Commencement, and is payable on the first day of the following college year; but the second bill of the Senior year must be settled by the Saturday before Commencement.

Students board in commons at $3.75 per week; in private families at $3.50 to $5.00 for table board. Other expenses vary with the economy of each student. Students furnish their own rooms.

The following estimates represent the fixed annual expenses: —

| | | |
|---|---|---|
| Tuition . . . . . . . . . . . . . | $100.00 | $100.00 |
| Physical culture, including gymnasium and grounds . . . . . . . . . . | 10.00 | 10.00 |
| Half room-rent . . . . . . . . . . | 15.00 | 75.00 |
| Care of rooms . . . . . . . . . . . | 10.00 | 10.00 |
| Board, $3.50 to $5.00 a week (36 weeks), | 126.00 | 180.00 |
| Total . . . . . . . . . . | $261.00 | $375.00 |

## SCHOLARSHIPS.

Awards of scholarships are made by the Board of Trustees on the recommendation of the Faculty. The obtaining of a scholarship for one year does not constitute any title to a second nomination.

Applications for scholarships and other aids must be filed with the Registrar, on blanks furnished for the purpose, on or before the tenth day of October; and, if the applicant be a minor, must be sanctioned by his parent or guardian. Scholarships will be granted, in general, only to students actually in need of such aid. No one need apply who has not made satisfactory progress, or who has come under any grave censure in the course of the year.

Besides the scholarships already established for students, a limited number of gratuities of fifty dollars each are offered, the number not to exceed the number of scholarships available in any given year.

Scholarships and gratuities are available for those students only whose term bills are fully paid within ten days after the opening of each college term or after such bills shall have become due. The bills of any student whose connection with the College ceases are due at that time. The term bills of members of the graduating class are payable on the Saturday preceding Commencement Day.

No scholarship or gratuity is available to any student who is not a resident of a college dormitory, unless excused in writing from such residence by the authority of the executive committee of the Board of Trustees.

The following scholarships, of one hundred dollars each, are awarded annually.

THREE STATE SCHOLARSHIPS, — Established in accordance with a resolve of the Commonwealth.

FIVE HOWLAND SCHOLARSHIPS, — Established from the income of the bequest of the late Edwin Howland, of South Africa.

FIVE WALKER MATHEMATICAL SCHOLARSHIPS, — Established in honor of the late William J. Walker, M. D., of Newport, R. I., and payable from the income of the Walker Fund.

TWO MOSES DAY SCHOLARSHIPS, — Founded by the late Moses Day, of Roxbury.

THE A. A. MINER SCHOLARSHIP, — Founded by the late A. A. Miner, D. D., of Boston.

THE REBECCA T. ROBINSON SCHOLARSHIP, — Founded by the late Charles Robinson, LL. D., of Newton.

THE WILLIAM OSCAR CORNELL SCHOLARSHIP, — Founded by William Oscar Cornell, of Providence, R. I.

THE ARA CUSHMAN SCHOLARSHIP, — Founded by Ara Cushman, of Auburn, Me.

THE LAURA A. SCOTT SCHOLARSHIP, — Founded by Mrs. Laura A. Scott, of Ridgefield, Conn.

THE STOW SCHOLARSHIP, — Founded by Mrs. Eugenia D. Stow, of Meriden, Conn.

THE NORCROSS SCHOLARSHIP, — Founded by James A. and Mrs. Mary E. Norcross, of Worcester.

THE ANDERSON SCHOLARSHIP, — Founded by John M. Anderson, of Salem, in the name of John M. and Rebecca Anderson.

THE TRAVELLI SCHOLARSHIP, — Founded by Mrs. Emily R. Travelli, of Newton.

THE WHITTIER SCHOLARSHIP, — Founded by Charles Whittier, of Roxbury, in the name of Charles and Eliza Isabel Whittier.

THE TALBOT SCHOLARSHIP, — Founded by Newton Talbot, of Boston.

THE SIMONS MEMORIAL SCHOLARSHIP, — Founded by Mrs. Mary A. Simons, of Manchester, N. H., in memory of Hiram, H. Augustus, and Frank Simons.

THE AMASA AND HANNAH L. WHITING SCHOLARSHIP,— Founded by Mrs. Hannah L. Whiting, of Hingham.

THE MARTHA GOLDTHWAITE MEMORIAL SCHOLARSHIP,— Founded by Willard Goldthwaite, of Salem.

THE ANDREW J. CLARK MEMORIAL SCHOLARSHIP,— Founded by Mrs. Abbie B. Clark, of Orange.

THE SARAH E. SAYLES MEMORIAL SCHOLARSHIP,— Founded by Albert W. Sayles, of Lowell.

THE COUSENS SCHOLARSHIP,— Founded by John E. Cousens, of Brookline, in the name of John E. and Sarah C. Cousens.

THE BENJAMIN F. SPINNEY SCHOLARSHIP,— Founded by Benjamin F. Spinney, of Lynn.

THE HENRY F. BARROWS SCHOLARSHIP,— Founded by Henry F. Barrows, of North Attleboro.

THE ELLERY E. PECK MEMORIAL SCHOLARSHIP,— Founded by Henry Rollins, of Bangor, Me. [The income of this scholarship is not at present available.]

THE J. H. MORLEY MEMORIAL SCHOLARSHIP,— Founded by Herbert Morley Small, of Baldwinville.

THE EDWIN H. CHAPIN MEMORIAL SCHOLARSHIP,— Founded by friends of the late E. H. Chapin, D. D., in New York City.

THE THOMAS A. GODDARD MEMORIAL SCHOLARSHIP,— Founded by Mrs. Mary T. Goddard, of Newton.

THE HOSEA BALLOU, 2D, MEMORIAL SCHOLARSHIP,— Founded by Mrs. Mary T. Goddard, of Newton.

THE HENRY E. COBB SCHOLARSHIP,— Founded by the late Henry E. Cobb, of Boston.

THE MARY ANN WARD SCHOLARSHIP,— Founded by Sylvester L. Ward, of Boston.

THE MARIA P. WINN SCHOLARSHIP,— Established from a bequest of the late Mrs. Maria P. Winn, of Woburn.

THE J. D. PEIRCE SCHOLARSHIP,— Founded by the children and other relatives of the late J. D. Peirce, D. D., of Attleboro.

THE SCHOLARSHIP OF THE CLASS OF 1857,— Founded by Heman Allen Dearborn, for the benefit of women students.

TWO STOWE SCHOLARSHIPS,— Two scholarships of one hundred dollars each for women students, founded by Mrs. Lucy H. Stowe, of Lawrence, Mass.

TWO SIMMONS SCHOLARSHIPS, — Founded by the will of Robert F. Simmons, of Attleboro, in the names of Mary F. and Robert F. Simmons.

The following scholarships of fifty dollars each are awarded annually : —

THE A. A. MINER SCHOLARSHIP,—Founded by A. A. Miner, D. D., of Boston.

THE PERKINS SCHOLARSHIP,— Founded by James D. Perkins, of Brooklyn, N. Y.

THE MOSES DAY SCHOLARSHIP, — Founded by the late Moses Day, of Roxbury.

THE STOWE SCHOLARSHIP,— Founded by Mrs. Lucy H. Stowe, of Lawrence, for the benefit of women students.

THE GREENWOOD PRIZE SCHOLARSHIP IN ORATORY, — Founded by the late Mrs. Eliza M. Greenwood, of Malden, and given to such student as shall have made, as the result of faithful work, together with a fair degree of attainment, the greatest improvement in Oratory.

LOAN FUND FOR WOMEN. — The Women's Universalist Missionary Society of Massachusetts maintains a fund which is loaned to deserving women students, in sums of one hundred dollars, at four per cent. This fund now amounts to about two thousand dollars.

APPOINTMENTS.— The pay of a monitor is *fifteen dollars* a year; that of the bell-ringer and the organist, *one hundred and fifty dollars* each.

## PRIZES.

GODDARD PRIZES.— In the second term of the academical year three prizes of *fifteen dollars* each are assigned from the Goddard Prize Fund, as follows : —

A prize for the best examination in Plato's Symposium, or the Agamemnon of Æschylus, including an account of the author and his works.

A prize for the best Latin prose translation, by a member of the class pursuing Latin 2. of the sixteenth section of Chapter X. in Liddell's History of Rome.

A prize for the best examination in the Mathematics of the first year.

The translations must be left at the President's office by the first day of May, in sealed envelopes, accompanied by sealed letters containing the authors' names.

RHETORICAL PRIZES. — Six prizes are awarded, as follows: —

Two prizes, of *twenty* and *ten dollars* respectively, to the best readers among students who have taken six term hours in Oratory.

Two prizes, of *twenty* and *ten dollars* respectively, to students who have taken four term hours in Oratory, for the best exhibition of improvement and skill in elocution.

Two prizes, of *twenty* and *ten dollars* respectively, on the same conditions, to students who have taken two term hours in Oratory.

The rhetorical prizes are awarded by a committee, chosen by the Faculty, who judge the work presented by the competitors upon the public day appointed for that purpose. In order to enter the public competition, candidates, as well as their selections, must be approved by the Professor of Oratory.

ENTRANCE EXAMINATION PRIZES. — Two prizes, of *thirty* and *twenty dollars* respectively, are awarded for the best entrance examinations. No one will be considered a candidate for such prize unless he has passed at the regular examinations in all the subjects required for admission to the College, and has been admitted without conditions. These prizes are payable at the end of the first term in College.

The foregoing prizes are not awarded unless, in the opinion of the respective judges, there is sufficient merit in the several contests to warrant their distribution.

## HONORS AND DEGREES.

FINAL HONORS will be conferred at Commencement upon any member of the graduating class in the Courses in Liberal Arts who shall have attained Grade A (at least eighty-seven per cent) in a major department, and Grade B (at least seventy-five per cent) in the collateral subjects.

Final Honors will be conferred at Commencement upon any member of the graduating class in the Engineering Courses who shall have complied with the following conditions: —

In two years preceding graduation, —

1. He must have attained Grade A (over eighty-seven per cent) in the equivalent of six hours a week for a year in the subject in which he desires honors.
2. He must also have attained Grade A in extra work in this or a cognate subject equivalent to three hours a week for a year.
3. He must have attained Grade B (over seventy-five per cent) in the average of all his studies during this period.

The following subject in the Engineering Courses is open for honors, — Electricity.

Honorable Mention will be made in the Commencement program and in the Annual Catalogue of a student who has attained Grade A or B in a department to which, during the two years preceding, he has given the equivalent of not less than six hours a week for a year.

The Degree of Bachelor of Arts will be conferred at Commencement by the Trustees, on recommendation of the Faculty, upon students who shall have complied in a satisfactory manner with the conditions stated on pages 40 and 48.

The Degree of Bachelor of Philosophy will be conferred upon students who shall have complied with the conditions stated on pages 40 and 48 for the attainment of that degree.

The Degree of Bachelor of Science will be conferred upon students who shall have completed the General Course in Science, the Special Course in Biology or in Chemistry, or the Medical Preparatory Course, complying in a satisfactory manner with the conditions stated on pages 46 and 83.

The Degree of Bachelor of Science in Civil Engineering, in Electrical Engineering, or in Mechanical Engineering, will be conferred upon students who shall have completed the required course, under the same conditions.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain the degree of Bachelor of Science in Civil Engineering, Electrical Engineering, or in Mechanical Engineering, after a graduate course of one year in the Engineering Department.

For the advanced degrees of MASTER OF ARTS, DOCTOR OF PHILOSOPHY, CIVIL ENGINEER, ELECTRICAL ENGINEER, and MECHANICAL ENGINEER, see Graduate Department, page 122.

# The Graduate Department.

## EXECUTIVE BOARD OF THE GRADUATE DEPARTMENT.

ELMER H. CAPEN, D. D., *President.*
HEMAN A. DEARBORN, A. M.
WILLIAM G. TOUSEY, A. M., B. D.
AMOS E. DOLBEAR, M. E., PH. D.
GEORGE T. KNIGHT, A. M., D. D., *Secretary.*
J. STERLING KINGSLEY, S. D.
FRANK P. GRAVES, A. M., PH. D.

## INSTRUCTION.

Graduate instruction is given by the General Faculty. The advanced elective work offered to undergraduates in any department of the College of Letters is open to graduate students, and will count for the degree of Master of Arts, on condition that it be not counted for any other degree. Additional courses still more advanced may be arranged in many cases with the instructor in whose department the work is to be done.

The degrees offered are Master of Arts, Electrical Engineer, Mechanical Engineer, Civil Engineer, and Doctor of Philosophy. Departments at present open to candidates for the degree of Master of Arts are:—

ENGLISH LITERATURE.
MODERN LANGUAGES.
LATIN.
GREEK.
HISTORY.
MATHEMATICS.
CHEMISTRY.
BIOLOGY.
ELECTRICITY.

The degree of Doctor of Philosophy is offered in CLASSICAL PHILOLOGY, CHEMISTRY, and BIOLOGY.

The conditions upon which the several degrees may be obtained and the requirements of the departments are stated below.

## DEGREES.

The Degree of Master of Arts will be conferred upon graduates of Tufts College who have received the degree of Bachelor of Arts or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of Bachelor of Arts, upon the following conditions : —

1. They shall have completed an approved course of advanced study, including the equivalent of at least thirty term hours, in one, or, at the most, two departments.
2. This course shall be pursued during a residence of not less than one year. The condition of residence may be waived by special permission, but in this case the degree cannot be taken with less than two years of graduate study.
3. The candidate shall prepare a thesis and pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.
4. No subject counted for the first degree will be counted for the second degree.
5. Candidates for this degree must make a written application to the Executive Board of the Graduate Department before October 1 of the college year in which the degree is to be conferred, and if the degree is not taken after one year's study they must also give a second notice three months before receiving the degree.

Graduates of Tufts College who have taken the degree of Bachelor of Philosophy, or graduates of other colleges holding a degree of similar grade, must complete the requirements for the degree of Bachelor of Arts before they can be entered as students in courses leading to the degree of Master of Arts.

The Degree of Civil Engineer, Electrical Engineer, or Mechanical Engineer will be conferred upon Bachelors of Science in Civil, Electrical, or Mechanical Engineering, respectively, who shall satisfactorily pursue advanced professional study at the College for one year, under the conditions required of candidates for the degree of Master of Arts; or who shall present suitable evidence of three years of professional work, of which one must be in a position of responsibility, in which case a certain amount of professional study will be assumed, upon which a thesis shall be presented.

THE DEGREE OF DOCTOR OF PHILOSOPHY will be conferred upon Bachelors of Arts, Philosophy, or Science, who shall have pursued at least three years of graduate study, two years of which must be in residence. This degree will not be conferred simply on the ground of the completion of the required course of study. High attainment is necessary, and especially the power of original thought and independent investigation. The whole course of study must be devoted to one subject, and a thesis must be presented giving evidence of original research. Other special requirements may be made by the instructors in charge of the work of the candidates. Each candidate must pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.

The candidate for this degree must make a written application to the Secretary of the Executive Board of the Graduate Department at least two years before the degree is to be conferred, and his thesis must be handed to the Secretary of the above board at least two months before Commencement.

THE DEGREE OF MASTER OF ARTS may be taken by candidates for the degree of Doctor of Philosophy at the end of their first year's study, or will be conferred together with the latter degree.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF MASTER OF ARTS.*

**English Literature.** — Candidates for the degree of Master of Arts must have taken subjects 1 and 2, with at least six term hours of work in each of the subjects numbered 3 and 4. Subjects 5 and 6, if not previously taken, may be pursued as graduate subjects, but the advanced student will be expected to do work surpassing in quantity and quality that required of undergraduate students. In addition to catalogue subjects, the graduate student will be expected to present, in the required thesis, the results obtained in some special line of investigation in literary history or criticism.

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* Subject numbers referred to in these statements are those used under Departments of Instruction, pages 51 to 82.

**Modern Languages.** — The extended undergraduate courses offered in Modern Languages enable the candidate for the degree of Bachelor of Arts, who specializes in this department, to cover the work formerly required for the Master's degree. For those who have not taken the more advanced subjects, the department offers a full graduate course leading to the degree of Master of Arts. The work is performed in existing undergraduate classes. (See pages 55 to 58.) To enter upon this course, the candidate must have completed the equivalent of six of the Modern Language subjects, including 1 and 2 in both German and French. Of elementary subjects only Italian may be taken by such as have had the equivalent of two years of French. Graduate students whose special work is being performed in other departments are admitted to such classes in German and French, beyond subject 1, as their proficiency will allow.

**Latin.** — Candidates for the degree of Master of Arts in Latin must have completed with credit all the subjects named on page 59, except 4 and 6. In subject 4 graduate students will be required to do more work than undergraduates. Subject 6 is intended for those who have taken all the others. The required thesis must embody the result of the special investigation of some author or period, or of some philological or archæological subject.

**Greek.** — Candidates for the degree of Master of Arts in Greek must have completed Greek 1, 2, 3, or 4, and 5 or 6, or equivalents for these subjects. Latin may be taken as minor work with Greek. Graduate students will be expected to do work of advanced character, whether in classes with undergraduates, or on special lines of investigation assigned by the instructor. The required thesis, on some approved topic, relating to some author, period, or philological problem, must give evidence of this advanced attainment.

**History.** — Every graduate student must have taken History 1, 2, and 4, or their equivalents. Candidates for the degree of Master of Arts must be able to read French works, and a working knowledge of German is desirable, and may in some cases be necessary. Of the subjects announced in the program of this department on page 65, 5 and 9 will be accepted as part of work leading to the degree of Master of Arts. In addition to these subjects work will be laid out for graduate students in such special lines as individuals may desire to pursue. Certain collateral subjects may be called for in such cases. Graduate students will be expected to do something in the way of independent investigation of a definite subject, the results to be embodied in the thesis required to obtain the degree.

**Mathematics.** — Graduate students in Mathematics must have passed creditably the prescribed undergraduate work in this department — Mathematics 1 — and may do graduate work from that point or from such more advanced point as they may have attained. Graduate students in Mathematics 2, 3, 4, 5, 6, and 7 will be required to do more advanced work in these subjects, to receive the degree of Master of Arts in Mathematics, than is required of undergraduate students.

**Chemistry.** — Candidates for the degree of Master of Arts must have completed subjects 1, 2, 3, and 10, or their equivalents. Subjects 4, 5, 6, 7, 8, 9, 11, 12, 13, and 14, are offered for graduate students, and satisfactory work must be done in at least five of these subjects. The candidate must present an acceptable thesis and pass satisfactory examinations in all of the subjects studied.

**Biology.** — Candidates for the degree of Master of Arts in Biology must have already done work equivalent to Biology 2, 3, and 4; or lacking that, they must take omitted subjects in addition to their graduate work. The work will be done in the lines of comparative anatomy, histology, or embryology, and will include a thesis embodying original research.

**Electricity.** — The candidate for the Master's degree in Electricity must have done substantially the work in that department required of the Bachelor of Electrical Engineering. This involves the election during his undergraduate course of studies in this department, if it is expected that the degree will be obtained within one year of graduate study.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

**Classical Philology.** — Candidates for the degree of Doctor of Philosophy must be able to read Greek and Latin readily at sight, and to use French and German authorities when necessary. They must have completed three years of advanced work, two of them, at least, in residence. The work will include Latin 6, and Greek 8, 9, and 10. Regular work antecedent to these subjects or its equivalent must have been previously accomplished. Candidates must, in the end, pass an examination on the work of the three years, and present a satisfactory thesis on some subject of original research in Classical Philology.

**Chemistry.** — Candidates must be able to translate scientific German readily and accurately before beginning their work, and must have already taken subjects 1 to 7 inclusive, 9 and 10, or equivalent work. Unless previously qualified, they must take subjects 11, 12, 13, 14, and 17 and devote at least one year to subject 15. Examinations in the above subjects must be satisfactorily passed and a thesis embodying an original investigation in Chemistry must be presented.

A well equipped laboratory is open to graduate students who may wish to pursue special lines of research, and the department is prepared to offer every facility for the encouragement of original investigations.

**Biology.** — Candidates must have a good working knowledge of French and German before beginning their work, they must carry on research in Animal Morphology for at least three years, two of which must be in residence, and they must have passed one summer at some seashore biological station. They must pass an examination on general zoölogy, embracing not only the fundamental facts of morphology and classification, but the more prominent philosophical views as well. Each candidate must present an acceptable thesis embodying original research, with an adequate discussion of the bearings of the facts discovered, and the views of previous writers on the same subject.

## FELLOWSHIPS.

THE OLMSTEAD AND MINER FELLOWSHIPS IN NATURAL HISTORY. — In accordance with the spirit of the gift of the late Charles Hyde Olmstead, of Hartford, Conn., the Trustees have established two fellowships in Natural History, to be known respectively as the Olmstead and the Miner Fellowships. The income of these fellowships, amounting to two hundred and fifty dollars annually each, is awarded by the Trustees to graduate students in Natural History subjects upon recommendation of the graduate Faculty. The conditions of the fellowships are as follows: —

(1) The application must be made in writing before May 1, addressed to the President of the College. It must contain evidence of a liberal education, of an ability to profit by the work to be done, and testimonials of good character from instructors or others. Any original article, either written or printed, is an aid in ascertaining the attainments of the candidate.

(2) The holder of the fellowship will be expected to devote himself to the prosecution of some special subject under the direction of the professors in charge of the departments of Natural History. He

may be called upon for minor services, such as conducting examinations, but he shall not be called upon to teach. He may, however, at his own option, and with the approval of the President, give instruction by lectures or otherwise to persons connected with the College, but not elsewhere.

(3) The payments will be made, half in January, and half in June: but, in case of resignation or removal from the fellowship, payment will be made only for the time it is actually held. The holder of the fellowship is not exempt from the payment of tuition.

(4) Residence is a condition of holding either of these fellowships.

The holder of a fellowship may be eligible to a single re-election, but incumbency constitutes no claim to reappointment.

## TUITION.

The tuition fee for the whole course for the degrees of Master of Arts, Civil Engineer, and Electrical Engineer is *one hundred dollars*, of which *fifty dollars* is payable in advance.

The tuition fee for candidates for the degree of Doctor of Philosophy is *one hundred dollars* for each year spent at the College, of which *fifty dollars* is payable in advance each year.

The requirement of bonds stated on page 113 applies to all students of the College, graduate as well as undergraduate.

# THE DIVINITY SCHOOL

# Faculty of the Divinity School.

ELMER H. CAPEN, D. D., *President.*
*In charge of Political Economy.*

CHARLES H. LEONARD, D. D., *Dean.*
*Goddard Professor of Homiletics and Pastoral Theology.*

THOMAS J. SAWYER, D. D.
*Packard Professor of Christian Theology, Emeritus.*

WILLIAM G. TOUSEY, A. M., B. D.
*Professor of Ethics and Philosophy of Theism.*

GEORGE T. KNIGHT, D. D., *Secretary.*
*Professor of Church History, also in charge of Systematic Theology.*

GEORGE M. HARMON, A. M., B. D.
*Professor of Biblical Theology.*

DAVID L. MAULSBY, A. M.
*Professor of Oratory.*

WARREN S. WOODBRIDGE, A. M., B. D.
*Woodbridge Professor of Applied Christianity.*

ANSON B. CURTIS, PH. D.
*Professor of Hebrew.*

## NON-RESIDENT LECTURERS.

HENRY I. CUSHMAN, D. D.
*Lecturer on Methods of Biblical Study.*

JOSEPH K. MASON, D. D.
*Lecturer on Preachers and Preaching.*

F. W. HAMILTON, A. M.
*Lecturer on Christian Economics.*

CHARLES R. TENNEY, B. D.
*Lecturer on Character and the Ministry.*

For Students of the Divinity School, see the Register, pages 29 and 30.

For the Calendar, see pages 4 and 5.

# The Divinity School.

The Divinity School is one of the departments of Tufts College, the general advantages of which are enjoyed by all its members in common. The College Library, the Museum of Natural History, the Gymnasium, are open to all. Courses of study and lectures in the College of Letters are open to the Divinity Students, subject, however, to the discretion of the Faculty. The graduates of the Divinity School in common with the graduates of the other departments are enrolled in the Quinquennial Catalogue of the College, and are eligible to membership in the Alumni Association of Tufts College.

## REQUIREMENTS FOR ADMISSION.

Candidates unknown to the Faculty must bring satisfactory testimonials of good character. They must believe in the Christian religion, and have a sincere purpose to devote their lives to the Christian ministry. It is expected that they will present themselves on the day preceding the first day of the academic year.

Bachelors of Arts are admitted to a three-years course, without examination, to be candidates for the degree of Bachelor of Divinity. Candidates for this degree who are not Bachelors of Arts are required to take a four-years course, and to well sustain an examination on average passages from the Latin of Cæsar, Cicero, and Virgil; and on average passages from the Greek of Xenophon, Homer, and the Gospels. Ability to read simple prose in French or German, and to write in French or German a paragraph upon an assigned subject, is accepted as an alternative for the requirement in Latin.

They are also required to pass a satisfactory examination in

Greek, Roman, English, and American History; in Rhetoric; in English Literature and in English Grammar and Composition, in which the requirement is as follows: —

ENGLISH GRAMMAR AND COMPOSITION.— Spelling, punctuation, structure of sentences, correct use of words, clearness of expression. The examination will consist (1) in criticising specimens of incorrect English; (2) in writing a short composition on a subject assigned. Subjects for composition will be drawn from the following standard works in English literature. All the books named for the given year are to be read, and, from two or three of them, subjects will be assigned at the time of examination.

For 1896.— Shakespeare's Merchant of Venice, and Midsummer Night's Dream; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Longfellow's Evangeline; Macaulay's Essay on Milton; Defoe's History of the Plague in London; Scott's Woodstock; Webster's First Bunker Hill Oration; Irving's Tales of a Traveller; George Eliot's Silas Marner.

For 1897.— Shakespeare's As You Like It, and Merchant of Venice; Defoe's History of the Plague in London; Burke's Speech on Conciliation with America; Scott's Marmion; Macaulay's Life of Samuel Johnson; Irving's Tales of a Traveller; Hawthorne's Twice Told Tales; Longfellow's Evangeline; George Eliot's Silas Marner.

For 1898.— Shakespeare's Macbeth; Milton's Paradise Lost, Books I. and II.; Pope's Iliad, Books I. and XXII.; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Coleridge's The Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables; Tennyson's The Princess.

Those whose age or circumstances forbid so extensive preparation are admitted to the privileges of the school, to take such studies in the regular classes as are suited to their attainments and needs. It is recognized that earnest and capable men aspire to the Christian Ministry, who are not able to make the formal preparation required of those who enter to be candidates for the degree.

Applicants from other Theological Institutions whose course of study is the equivalent of that pursued in this institution, will be received *ad eundem.*

# Course of Study.

## SUB-JUNIOR CLASS.

**Psychology.** — The Intellect; The Sensibilities; The Will; Leading Questions of Mental Philosophy. *Three hours a week (first half-year).* PROFESSOR TOUSEY.

**Logic.** — The First Principles of Logic; Concepts and Propositions: Immediate Inference; Deduction; Induction; Analogy; Hypothesis. *Four hours a week (second half-year).* PROFESSOR TOUSEY.

***Rhetoric.** — Principles of Effective Speech; Rhetorical Analysis; Themes. *Three hours a week for one third of the year.* PROFESSOR LEONARD.

**Old Testament.** — Hebrew History. *Four hours a week.* PROFESSOR CURTIS.

***Oratory.** — Class exercises in vocalization and gesture. The Principles of Oratory, exemplified in practice. *One hour a week.* PROFESSOR MAULSBY.

## JUNIOR CLASS.

**Logic.** — Fallacies; Analysis of Arguments; Ethics of Belief. *Two hours a week (first half-year).* PROFESSOR TOUSEY.

**Old Testament.** — Old Testament Theology. *Two hours a week.* Hebrew Language Studies (optional). *Two hours a week.* PROFESSOR CURTIS.

**New Testament.** — Criticism of the Synoptic Gospels, Textual and Historical; Hermeneutics; Life and Teachings of Jesus from the Greek of the Synoptic Gospels, with studies from the life of his times. *Four hours a week.* PROFESSOR HARMON.

**Church History.** — History of the Church, of the Sects, and of Doctrines, from the Apostles to the Present Time; History of Doubt. *Four hours a week (first half-year); three hours a week (second half-year).* PROFESSOR WOODBRIDGE *and* PROFESSOR KNIGHT.

**Homiletics.** — History of Preaching; The Idea and Structure of the Sermon; Homiletic Analysis. *Three hours a week (second half-year).* PROFESSOR LEONARD.

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*Omitted this year.

**Oratory.** — Practice in the reading of Scripture, Hymns, and in formal and extemporaneous preaching. *One hour a week.*
PROFESSOR MAULSBY.

## MIDDLE CLASS.

**Old Testament.** — * Old Testament Sociology. *Two hours a week.* Hebrew Language Studies (optional). *Two hours a week.*
PROFESSOR CURTIS.

**New Testament.** Criticism of Acts and the Epistles; History and Doctrines of the Apostolic Church, from the Greek of Acts and the Epistles, with studies from the life of the times. *Four hours a week.* PROFESSOR HARMON.

**Ethics.** — The Moral Nature; Ethical Theory; Practical Ethics; Ethics and Theism. *Three hours a week.*
PROFESSOR TOUSEY.

**Systematic Theology.** Theology; Anthropology; Soteriology; Eschatology; Critical Study of Modern Doctrines. *Four hours a week (first half-year); three hours a week (second half-year).*
PROFESSOR KNIGHT.

**Homiletics.** — Study of Sermons of Eminent Preachers; Lectures; Sermon Writing and Preaching. *Three hours a weeks.*
PROFESSOR LEONARD.

**Applied Christianity.** — Organization and Government of the Various Sects; the Relations of the Church to Individual and Social Life. *Two hours a week.* PROFESSOR WOODBRIDGE.

## SENIOR CLASS.

**New Testament.** — Criticism, Exegesis, and Doctrines of the Fourth Gospel. *Two hours a week.* PROFESSOR HARMON.

**Comparative Theology.** — The Religions of Ancient Egypt and Chaldæa; Hinduism; Buddhism; Confucianism; Taouism; Parseeism; Mohammedanism. *Three hours a week (first half-year).*
PROFESSOR KNIGHT.

**Philosophy of Theism.** — Limits of the Intelligence; Theistic Arguments; Special Studies with Reference to the Evidences of Final Causes in Nature; Anti-Theistic Theories. *Three hours a week.*
PROFESSOR TOUSEY.

**Political Economy.** — Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, Lectures, and Independent Investigations dealing with the History of Economics, Theories

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*Omitted this year.

of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Three hours a week (first half-year).*
PRESIDENT CAPEN.

**Homiletics.** — Homiletic Analysis; Lectures on Preaching; Composition and Delivery of Sermons. *Three hours a week.*
PROFESSOR LEONARD.

**Applied Christianity.** — The Pastor's Personal Qualifications and Duties; Organized Work in the Parish; The Conduct of Public Worship; The Mode of Conducting the Special Services of the Church; Actual Work in Missions and Charities. *Two hours a week (first half-year); four hours a week (second half-year).*
PROFESSOR WOODBRIDGE *and* PROFESSOR LEONARD.

# Departments of Instruction.

**Psychology.** — The direct study of mental phenomena is encouraged, and the student is trained in the methods of psychological research. At suitable points attention is called to the great philosophical questions that have their origin in the study of mind. The aim throughout is eminently practical; and, while seeking a consistent theory of mental phenomena, there is constant reference to the professional uses of the science, — to the bearing of psychological law upon self-culture, and upon the arts of instructing and persuading men. Special effort is also made to supply the psychological data of the subsequent studies of the course.

**Logic.** — The Sub-Juniors receive instruction in the usual topics of an academic course. Considerable time is given to logical analysis and the employment of the inductive method as respects both discovery and proof.

The Juniors are exercised more especially in the application of logical principles. A review of the fallacious tendencies of the mind is followed by an extended study of Fallacies, as exemplified in the practical reasoning of men. The course concludes with a brief study in the Ethics of Belief. Under this head the nature and conditions of belief are discussed, the general principals of evidence reviewed, and certain current misconceptions exposed; the aim being to enforce the duty of rationalizing our beliefs, and while pointing out the limitations of the reason, to develop confidence in its actual findings, and a proper fortitude of conviction.

**Rhetoric.** — The subjects of study are those usually discussed in the best treatises on Practical Rhetoric, especially in the chapters which deal with the art of constructing discourse, and with the methods of applying the principles of rhetoric in actual literary work.

**Old Testament.** — I. HEBREW: The aim is a working knowledge of the language of the Old Testament. The first part of the year is devoted to the grammar and the vocabulary of the more common words, with the reading of easy prose. The second part of the year is occupied with exegetical and critical readings from the Pentateuch, with especial reference to modern theories.

II. ADVANCED HEBREW: This is a continuation of Course I. Selections from ancient, middle, and later Hebrew are read, and the various critical questions examined from the point of view of the changed vocabulary and the growing ethical and religious insight.

The courses in the Hebrew language are elective, and aim to supplement the work of the other courses, being at once more technical and more thorough, and leading naturally to independent study and research.

III. HEBREW HISTORY: The aim is to impart a knowledge of Israelitish history from its beginning to its close. The text-book is the revised version of the Old Testament; and each reading is followed by a lecture on the part read in explanation and elucidation of the text. So far as possible, books and parts of books are read in chronological order, and especial attention is paid to recent discoveries, Assyrian, Babylonian, Palestinian.

IV. OLD TESTAMENT THEOLOGY: The purpose is to systematize and emphasize the salient and permanent elements in Old Testament Religion. This course is essentially a continuation of Course III., and includes readings in the Psalms, Wisdom Books, and Apocrypha. Available treatises are used as texts, and lectures are given on the canon and text of the Old Testament, and on special topics in Jewish Theology.

V. OLD TESTAMENT SOCIOLOGY: The effort is to give, by means of lectures, a view of the social development of man as illustrated in Hebrew History. The method is inductive and exegetical, while it seeks to do justice to the highest ideals of the Bibical authors. The main divisions of the study are, Social Beginnings, The Family, The State, Economics, and the influence upon these subjects of the Biblical Religion and Morality.

Readings are assigned in the various histories and theologies of the Old Testament, and in the Commentaries.

**New Testament.** — In the Junior Year the sources of the text of the New Testament are considered with the principles employed in determining the true text, the aim being to render the student intelligent as to the procedure in Textual Criticism, and the bearing this procedure has on the work of exegesis. The History of the Canon for the first two centuries, and the historical and literary criticism of the Gospels, are next treated, to secure on the part of the student an understanding of the principal problems involved and of the grounds of their discussion, the habit of sober and sound criticism, and a knowledge of the nature and contents of the Gospel writings.

In dealing with the Life of Jesus, notes on methods of correct interpretation are given the class, and their application is required in its exegetical work. The significant points and phases in the life and ministry of Jesus are selected and considered, passages from the Greek of the Synoptic Gospels being employed, to obtain a knowledge of the mind of Jesus, his relations to the parties and people of his times, the methods he pursued in his ministry, the course of facts in his life, and the doctrines he taught. Incident to this study, the critical points in dispute are considered as they arise. Historical and archæological questions are examined in their natural connections.

In the Middle Year the History and Doctrines of the Apostolic

Church are studied, the Book of Acts being used as the basis. This writing is first examined as a historical authority; passages from it in Greek are chosen, giving the significant stages in the external growth of the church and in its internal development; and these are studied with the aim to trace the first realization of the life of Jesus in the world. The Epistles of St. Paul are critically examined in the order of their origin in his ministry. The introduction to Hebrews and to the Catholic Epistles concludes the year's work.

As a part of this study the Theology of the New Testament is taken up. The attempt is made to discover the teaching of Jesus contained in the Synoptic Gospels. With this teaching as the basis, the individual interpretations of the several Synoptists, of the author of the Fourth Gospel, of St. Paul in his earlier and later epistles, of the author of Hebrews, and the writers of the Catholic Epistles, are compared, each writing being first considered by itself. The aim is to obtain the common elements of teaching, and also what is distinctive in each writer and time.

In the Senior Year the problem of the Fourth Gospel is considered: the question of its use among the early Fathers, its internal character and its relation to the other New Testament writings, and to the thought of the Apostolic Church. The books used in the latter part of this year's work are in the German language.

**Church History.** — The purpose is to secure a knowledge of the leading facts and forces in the history of the Christian Church in its various branches. By such a knowledge, discovering the causes now at work in religion, the student obtains a grasp of present facts and problems such as he can obtain from no other source. Incidentally he becomes familiar with theological terms, and is furnished with the tools of theological work. In general, since in some degree the individual grows as the mass has grown, he finds in this study an education, an orderly development of his faculties.

The topics generally studied in regard to each period are: The External Growth of the Church, and its relations to the State; the Internal Organization; Intellectual Life and Doctrine; Moral Life; the Form and Substance of Worship. In the latter part of the year special study is made of the chief religious sects in the United States, and, lastly, of the History of Doubt.

The books used by the student are mostly contained in the Library of the College and in that of the Universalist Historical Society. They include Migne's edition of the Fathers; translations of the ante-Nicene Fathers, and others; the chief secondary authorities on general Church History, such as the works of Schaff, Fisher, Neander, Alzog; and the special historical works of Fisher, Müller, Dorner, Briggs, Eddy, Ballou; and of the American Church History series.

In preparation for the regular class-room exercise, the student is provided with an analysis of each topic in order, and with references to original and secondary authorities. The student brings the result of his investigation to the class-room for criticism by his associates and instructor. At the completion of each topic the results are organized, and a written review held, the papers of which are returned, with comments as to truthfulness and mode of handling.

The students are also instructed in the methods of original investigation from primary authorities; and, especially in the history of doctrines, they prepare several pieces of original work during the year.

**Comparative Theology.** The primary aim of this study is a general knowledge and a catholic temper regarding the non-Christian religions. A secondary utility is found in that a candid study of the excellencies and defects of many religions renders the student more able to reject the false, and more inclined to rest in the true, and to give it his confidence and strength.

The sources of information to which the student is referred are the Records of the Past, Müller's edition of the Sacred Books of the East, Müller's own writings, the series entitled Non-Christian Religious Systems; and, in addition, the works of Rawlinson, Wilkinson, Sayce, Johnson, Barth, Legge, Oldenberg, Edkins, Haug, and others. Considerable use is also made of articles in the Encyclopædia Britannica.

The religions studied are those of ancient Egypt and Chaldæa; Hinduism, ancient and modern; the religions of Gautama Buddha, Confucius, Lao-tse, Zoroaster, and Mohammed.

The chief topics noted are: The Deity; the Forms and Meaning of Worship; the Theory of Ethics, and the Sanctions of Moral Life, including the Scheme of Salvation; the Actual Condition of the People representing each religion.

For the study of each topic in turn, the class is furnished with a syllabus and references. The results of their investigations are criticised and co-ordinated by students and instructor in the class-room.

The main purposes of this study are further secured by frequent inductive reviews, oral and written.

**Ethics.**—Analytical and inductive study of the moral experience is followed by an attempt to develop a correct moral theory. Attention is given to the leading questions in ethical philosophy. Such doctrines as Sentimentalism, Hedonism, Utilitarianism, Intuitionalism, and Determinism are studied, not merely in a critical spirit, but with a view to discover the special aspects of truth for which they stand.

During the second half of the year the class attends more especially to Practical Ethics, dealing with the leading contemporary problems, such as Education, Charities, State Aid, Temperance, Socialism, etc. Some attention is also given to Casuistry. The course concludes with a review of what is distinctively known as Christian Ethics. The instruction throughout is shaped to bring into clearness the fundamential principles of morality, and to show their importance in the conduct of the personal life and in the moral guidance of others.

**Philosophy of Theism.** — After some discussion of Agnosticism and other antecedent objections to Theism, the various modes of the theistic argument are reviewed, their grounds scrutinized and their logical value carefully considered. In discussing the attributes of God, and his relation to the universe, Pantheism and Pessimism receive somewhat special notice. The general method here, as in ethics, is to employ treatises available as texts, and to supplement them by means of annotations, lectures and parallel readings, the aim being to lead the student to the sources of evidence, and to establish a vigilant and correct method of inquiry. Much importance is attached to the dialectic of the class-room, as securing a ready command of resources, and as a corrective of ill-defined notions and hasty inference. An effort is made to treat subjects in the light of contemporary criticism and the latest developments of science; and, by testing and chastening conclusions, to provide against fanaticism on the one hand, and frivolity of judgment on the other.

**Systematic Thelogy.** — The purpose is, primarily, to assist the student to think independently on theological subjects, and to abide in the consequences. In pursuing this purpose attempt is made to co-ordinate the products of Biblical Theology, Religious History, Natural Theology, Ethics, and, indeed, of all the proper sources of material, and thus to produce a scientific theology. It is believed that such a system will deserve and receive the student's confidence, and will enlist his energies.

The subject has four great divisions, — the Doctrine of God, the Doctrine of Man, the Doctrine of Salvation, and the Doctrine of the Future Life. The traditional sub-divisions are noted historically, but are accepted only so far as they seem to rest on essential principles or the real relations of truth.

The method includes several stages: —

1. The outline history of thought on the topic in hand, or the analysis and classification of opinions and theories according to their logical relations.

2. The collection of the facts, so far as given in the present state of knowledge, and the criticism of the theories on the basis of the facts.
3. The organization of the results into a scientific product.
4. Illustrative applications to practical problems, — ecclesiastical, political, social, and personal.

This method requires frequent reference to books used in the departments whose products are here co-ordinated, and to the theological works of A. H. Strong, Charles Hodge, James Martineau, Robert Flint, J. A. Dorner, H. Martensen, J. Müller, and other representative teachers of all times and faiths.

The student is furnished with references to the various sources of material, he is instructed in the method of inquiry, and his results are criticised in the class-room. The occasional written examinations require original work, in part, and one original essay from each student is required within the year.

**Homiletics.** — The course in Homiletics covers one half of the Junior year and all of the Middle and Senior years, and includes the study of the most characteristic and instructive periods in the history of preaching; dictations and lectures on the idea and structure of the Sermon; analyses of portions of the Old and the New Testaments, with a view to the homiletical use of texts; the study of printed sermons, with special reference to form, expression, and the character and range of illustration; the composition and delivery of sermons, not less than six during the year, all of which are criticised by the class and by the professor; lectures during the Senior year on Invention and Arrangement of Material, Modes of Development, Style in Spoken Discourse, Helps in Sermon-Preparation, Illustrations and Use of Anecdote, the Homiletic Habit, Modern Schools of Preaching, Philosophy of Preaching, Personality in Preaching, Character and Preaching.

**Applied Christianity.** — I. The History of Christianity is traced from its beginnings, with the special aim to discover by what methods the application of Christian principles has been secured and what results have followed; and in general to study the influence of Christianity as a factor of individual development and social progress.

II. The second part of this course is devoted to a study of Christian principles in their present day applications, and of the Christian Church as it exists in modern times, giving attention to the constitution, organization, government of the various sects, and also to methods of work in missions, in reforms, and charities as these are undertaken by Christians of to-day. This study is followed with a discussion of the visible opportunities for work proper to the Church and to Christians, and of the instrumentalities which the most successful working churches employ.

III. The final topic in this department is the pastor's office. The subjects discussed relate to the more private and personal care which the minister exercises toward the members of a single congregation, or toward others whom he may be expected to influence. Careful study is invited to the qualifications, spiritual, mental, social, of a good pastor, the methods of forming and strengthening a parish, the conduct of public worship, and the mode of conducting the special services of the church, —baptism, confirmation, the Lord's Supper, marriage, and the burial of the dead. The object in this part of the course is the practical preparation of the pastor for his sacred duties.

The work (II. and III.) of the Middle and Senior years is supplemented with lectures by clergymen and others, who are actively engaged in missions and charities; and the students are encouraged to visit churches and stations in the neighboring cities, that they may study the methods of those who are in living contact with want and suffering; engage in actual benevolent work under the direction of skilled workers, and make report of what they see and do, for discussion in the class-room. This special work is meant to meet the demand for a closer contact between the church and the daily lives of the people, and for a more sympathetic interest in their social and industrial problems.

**Oratory.** The object of the instruction in the department of Oratory is to gain a natural, impressive and reverent manner of reading the Bible and the hymn-book, and also to cultivate in preaching a delivery that shall be forcible and sincere. To this end the work of the first year involves consideration of the fundamental principles that underlie all oratory, accompanied by practice to assimilate these principles. In the second year the practice becomes specifically adapted to the needs of students of divinity, and includes Scripture and hymn reading, and the preaching of both written and unwritten discourse.

# General Information.

## RELIGIOUS EXERCISES.

Devotional services, conducted by the Professors and the Students, are held daily in the chapel Members of the upper classes prepare sermons and preach them in turn before the class. An active branch of the Young People's Christian Union holds regular meetings for religious conference.

## EXAMINATIONS.

Frequent written reviews are held in all departments; and when any subject is completed, the students are required to pass a written examination thereon.

## LIBRARIES AND LECTURES.

Students have free access to the general library of the College and to the valuable library of the Universalist Historical Society. Important public libraries of Boston are open to students for consultation.

Supplementary lectures, which bear upon the general work of the Christian ministry and upon special subjects of study, are given at intervals throughout the year by well-known clergymen of the vicinity.

## ELECTIVE STUDIES.

Students are permitted to elect studies in other departments of the College, subject, however, to the discretion of the Faculty. Opportunities for pursuing advanced studies are offered to graduates and to others sufficiently qualified.

## GENERAL FACILITIES.

Important facilities for general improvement are offered to students, in the valuable libraries and museums of Boston and

vicinity. Elaborate courses of lectures on scientific, social, and literary subjects are presented to the public from time to time. The most noted divines of New England officiate every Sunday within easy distance, and may be studied by the student in respect to their teachings and their methods. It is the policy of the school to encourage the judicious use of these important instrumentalities of culture.

## GYMNASTICS.

At least two years' work in the Gymnasium is ordinarily required of all students. Provision is made for continuing such work according to individual needs.

## THE DEGREE OF MASTER OF ARTS.

THE DEGREE OF MASTER OF ARTS is conferred at the same time with the degree of Bachelor of Divinity upon Bachelors of Arts of Tufts College who have pursued with distinction the full course for B. D. This degree is conferred under the same conditions on Bachelors of Arts of other colleges, whose courses of study have been equivalent to the course for which the degree of A. B. is given by Tufts College.

This degree may also be received by Bachelors of Arts, who do not apply for the degree of Bachelor of Divinity, after taking with credit an approved course of one year or more in this school, under conditions defined in the statement of the Graduate Department.

## BUILDINGS FOR THE USE OF THE DIVINITY SCHOOL.

Miner Theological Hall contains eight large, well-lighted, and well-ventilated lecture rooms, and a special room for the meetings of the Faculty. Until other buildings are provided one of the rooms in this hall is used for the Historical and Reference Libraries, and one is appropriately furnished for the Religious Services of the school. A third room in the same hall is furnished as a parlor, and known as the Maria Miner Reception Room.

Paige Hall, the Dormitory of the Divinity School, contains thirty-six single rooms, heated by steam and lighted by gas. Each room is carpeted, and provided with all necessary furniture — except sheets, blankets, pillow-cases, and towels.

Rooms are assigned in the order of application, but no room is reserved for any appplicant, who does not appear within one week of the opening of the College year.

At present no provision is made for free dormitory accommodations for the women who enter the Divinity School. As a rule they find homes in families in the neighborhood. The expense for room and board in such families is from four to seven dollars a week. The latter price would probably include steam or furnace heat, and light. The women students in the Divinity School may also find rooms and board in Metcalf Hall on the same terms and subject to the same conditions as apply to the women who enter the College of Letters.

## EXPENSES AND PECUNIARY AID.

No charge is made for tuition, rent of rooms and use of furniture in Paige Hall, or for use of libraries. The necessary expenses for board, washing, steam heat, gas, care of room, and gymnasium charges do not exceed two hundred and twenty-five dollars a year. The General Convention of Universalists aids students by a system of loans not exceeding one hundred and fifty dollars a year to any one student; and the Faculty of the Divinity School is authorized to assign Dockstader scholarships to those whose circumstances require it. Those students, also, who are in the regular course are permitted to preach, under the direction of the Faculty, during the year and a half preceding their graduation. In this way they may add to their pecuniary resources.

## BONDS AND DEPOSITS.

Each student who enters the Divinity School is required to deposit with the Bursar of the College either a bond, with two satisfactory sureties, for the amount of fifty dollars, or he may deposit the sum of twenty-five dollars in money, which sum will bear interest at the rate of four per cent yearly, and will be returned to the student when he leaves the Divinity School, his term bills first being paid in full.

## LICENSE TO PREACH.

The regular time for applying for licensure is near the close of the first half of the middle year. Before that time the members of the Divinity School are not allowed to preach.

## SCHOLARSHIPS, ETC.

The Greenwood Scholarship. — The income of one thousand dollars, bequeathed by the late Mrs. Eliza M. Greenwood, of Malden, is given in prizes to members of the Divinity School for excellence in the department of Oratory.

The Dockstader Scholarships. — The income of ten thousand dollars, given by George A. Dockstader, of New York, is appropriated to the aid of needy and worthy students.

The income of five hundred dollars, given by Rev. John Vannevar, is used in the purchase of books for the Department of Homiletics.

# MEDICAL SCHOOL.

# Faculty of the Medical School.

ELMER H. CAPEN, D. D., President.

ALBERT NOTT, M. D., West Newton.
Dean *and Professor of Physiology.*

CHARLES P. THAYER, M. D., 74 Boylston Street, Boston.
Secretary *and Professor of General, Descriptive, and Surgical Anatomy.*

HENRY W. DUDLEY, M. D., Abington.
*Professor of Pathology.*

WILLIAM R. CHIPMAN, A. B., M. D., Chelsea.
*Professor of the Principles and Practice of Surgery and Operative Surgery.*

WALTER L. HALL, M. D., Medford.
*Professor of the Principles and Practice of Medicine.*

JOHN W. JOHNSON, M. D., 20 Worcester Street, Boston.
Treasurer *and Professor of Obstetrics.*

FRANK G. WHEATLEY, A. M., M. D., North Abington.
*Professor of Materia Medica and Therapeutics.*

SAMUEL G. WEBBER, A. B., M. D., 146 Marlboro Street, Boston.
*Professor of Neurology.*

ERNEST W. CUSHING, A. B., M. D., 168 Newbury Street, Boston.
*Professor of Gynæcology.*

ARTHUR E. AUSTIN, A. B., M. D., 585 Washington St., Dorchester.
*Professor of Medical Chemistry.*

CHARLES A. PITKIN, A. M., Ph. D., South Braintree.
*Professor of General Chemistry.*

HAROLD WILLIAMS, A. B., M. D., 528 Beacon Street, Boston.
*Clinical Professor of the Diseases of Children.*

JOHN A. TENNEY, M. D., 2 Commonwealth Avenue, Boston.
*Professor of Ophthalmology.*

JOHN L. HILDRETH, A. B., M. D., 14 Garden Street, Cambridge.
*Professor of Clinical Medicine.*

HERBERT L. SMITH, A. M., M. D., 156 Newbury Street, Boston.
*Professor of Clinical Surgery.*

WALTER CHANNING, M. D., Brookline.
*Professor of Mental Diseases.*

THOMAS M. DURELL, M. D., Somerville.
*Professor of Medical Jurisprudence.*

FREDERICK L. JACK, M. D., 437 Boylston Street, Boston.
*Professor of Otology.*

## OTHER INSTRUCTORS.

WILLIAM R. WOODBURY, A. B., M. D., 164 Newbury St., Boston.
*Lecturer on Hygiene.*

WILLIAM A. WHITE, M. D., Marcella Street, Roxbury.
*Lecturer on Diseases of Children.*

GEORGE A. WEBSTER, M. D., 28 Greenwich Park, Boston.
*Lecturer on Otology.*

FRED H. MORSE, M. D., Melrose.
*Lecturer on Electro-Therapeutics.*

WALTER J. OTIS, M. D., 267 Beacon Street, Boston.
*Lecturer on Rectal Diseases.*

WILLIAM S. BOARDMAN, M. D., 6 Bowdoin Square, Boston.
*Lecturer on Laryngology.*

FRED S. RADDIN, M. D., Chelsea.
*Lecturer on Genito-Urinary Surgery.*

FRANK B. BROWN, M. D., 501 Washington Street, Dorchester.
*Instructor in Bacteriology and Assistant in Pathology.*

WILLIAM. P. DERBY, M. D., 421 Marlboro Street, Boston.
*Instructor in Gynœcology and Obstetrics.*

CHARLES G. CUMSTON, M. D., 421 Marlboro Street, Boston.
*Instructor in Gynœcology.*

E. CHANNING STOWELL, M. D., 69 Adams Street, Dorchester.
*Instructor in Children's Diseases.*

CHARLES D. KNOWLTON, M. D., Boston.
*Demonstrator of Anatomy.*

EDWARD E. THORPE, M. D., 711 Boylston Street, Boston.
*Assistant in Medical Chemistry.*

CHARLES L. CUTLER, M. D., Marlboro.
*Assistant in Gynœcology.*

ALBERT E. ROGERS, M. D., 143 Washington Street, Dorchester.
*Assistant in Materia Medica.*

THOMAS F. GREENE, M. D., 316 Warren Street, Roxbury.
*Assistant Demonstrator of Anatomy.*

RICHARD M. PEARCE, JR., M. D., 585 Washington St., Dorchester.
*Demonstrator of Physiology.*

J. C. D. CLARK, M. D., 17 Moulton Street, Charlestown.
*Assistant in the Theory and Practice of Medicine.*

HOWARD S. DEARING, M. D., 607 Tremont Street, Boston.
*Assistant in Clinical Medicine.*

HERBERT W. WHITE, M. D., 161 Warren Street, Roxbury.
*Assistant in Clinical Medicine.*

CHARLES A. HEBBERT, M. D., Boston.
*Demonstrator of Legal Medicine.*

MARY E. WELLINGTON, New York City.
*Prosector of Anatomy.*

### Laboratory Assistants.

HAIRABED S. DJELALIAN, Boston.
*General Chemistry.*

FRED HILLIARD ROBINSON, Somerville.
*Medical Chemistry.*

HENRY P. JOHNSON, Richmond, Va.
*Bacteriology.*

# The Medical School.

The Medical School of Tufts College was established in 1893. It offers to women the same facilities that it offers to men. Since the school was opened its corps of instructors has been considerably enlarged, its clinical advantages have been increased, and it offers every opportunity needed for undergraduate study, and in many directions for graduate study and research.

The school is temporarily located at 188 Boylston Street in the city of Boston, in a building belonging to the College. In the coming year it is expected that new and more commodious quarters, especially adapted for the purposes of a Medical School, will be provided.

The present building is directly opposite the Public Gardens, and within a few steps of Park Square, one of the great street-car centres of the city, making it convenient to all the hospitals, dispensaries and public buildings, and the railway stations.

Upon the first floor occupied by the College are the lecture hall, Faculty room, and the women's study and toilet rooms. The lecture hall is supplied with comfortable chairs upon a raised platform, giving the student an unobstructed view of the lecturer, and the illustrations of the subject upon which he is engaged. This room has an abundance of light, while the blackboards and charts add to the convenience of demonstration. The room for women students is large, comfortable, and well supplied with chairs, tables, and desks, and adjoining it is the women's toilet room

Upon the next floor are the smaller lecture room, the bacteriological laboratory, the private room of the Professor of Medical Chemistry, and the men's study room. The laboratory upon this floor is well adapted to the uses for which it was designed, being fitted with a firm stationary table, and with individual artificial lights of the most modern construction, thus enabling the student to use his microscope without dependence upon daylight It is well-equipped with microscopes and all necessary appliances.

Upon the third floor are the general chemistry laboratory and dissecting room. The laboratory is fitted with individual lockers, which are furnished with the various re-agents and glassware used by the student, which are distributed to him from the private room of the Professor of Chemistry on the same floor. The dissecting room is well-lighted, and furnished with modern inclined tables, to which are attached receptacles for all refuse matter.

Students of the Medical School have access, for work in Histology and Embryology, to the admirable laboratories of the biological department of Tufts College, in the Barnum Museum at College Hill.

# Requirements.

## FOR ADMISSION.

### To the Freshman Class.

(1) An English composition of not less than 200 words.

(2) The translation of easy Latin prose, or evidence of a familiarity with the derivation of medical terms, and medical and pharmaceutical terminology.

(3) Higher arithmetic including decimal and vulgar fractions and percentage.

(4) Elementary Physics. An acquaintance with the subject as treated in Avery's or Gage's work.

Students who fail in not more than two of these examinations may be enrolled as conditioned and will be required to make up the deficiency during the session, before they can be enrolled as students in regular standing.

**Exceptions.** — No entrance examination is required of matriculates or graduates of medical, pharmaceutical, or dental colleges requiring a similar entrance examination, nor of matriculates or graduates of reputable colleges of literature, science, and the arts, nor of graduates of high or State normal schools or of institutions of similar grade. To save delay students are requested to bring their diplomas and certificates with them.

### To the Second Year Class.

Students of this and other accredited medical schools who have passed a majority of the examinations of the Freshman Year, which include Descriptive Anatomy, Physiology, General Chemistry, Histology and Hygiene, may be admitted to the Second year class.

Students of dental colleges whose standard of instruction is approved by the Faculty of this School, who have attended two full courses of lectures and passed the examinations of the Freshman year as above noted, may be admitted to the Second year class.

### To the Third Year Class.

Students of this and other accredited medical schools who have passed the examinations of the Freshman year and a majority of those of the second year, which include Applied Anatomy, Medical Chemistry and Toxicology, Materia Medical and Therapeutics, Pathology and Bacteriology, may be admitted to the Third year class.

### To the Senior Class.

Students of this and other accredited medical schools who have passed all the examinations of the Freshman and second-year studies and a majority of the third year studies, which include Theory and Practice of Medicine, Surgery, Obstetrics, Gynæcology, Neurology, Pediatrics, and Mental Diseases, and graduates of other regular medical schcols, may be admitted to the Senior Class.

Graduates of Pharmacy may be admitted to the Freshman year and excused from General Chemistry.

Students must matriculate before November 1 of each year, in order to fulfil requirements of time.

## REQUIREMENTS FOR GRADUATION.

Candidates for the degree of Doctor of Medicine must fulfil the following requirements.: —

They must be twenty-one years of age, and of good moral character.

They must have attended four full courses of medical lectures at some accredited medical college, the last of which shall have been at this school, and no two courses in the same year.

They must have passed all the required examinations.

They must have attended one case of obstetrics.

They must have dissected one half of the body.

## DIVISION OF STUDIES.

For the Freshman Year. — Descriptive Anatomy, Physiology, General Chemistry, Histology and Embryology, and Hygiene.

For the Second Year. — Applied Anatomy, Medical Chemistry and Toxicology, Materia Medica and Therapeutics, Pathology and Bacteriology.

For the Third Year. — Theory and Practice of Medicine, Surgery, Obstetrics and Clinical Obstetrics, Neurology, Pediatrics, Gynæcology.

For the Senior Year. — Clinical Medicine, Clinical Surgery, Clinical Gynæcology, Genito-Urinary Diseases, Rectal Diseases, Mental Diseases, Ophthalmology, Otology, Laryngology, Clinical Pediatrics, Electro-Therapeutics, and Legal Medicine.

# Departments of Instruction.

## Anatomy.

Professor Thayer.
Drs. Knowlton and Greene. } *Five hours a week.*

The course in Anatomy comprises, for the Freshman year, lectures, recitations, and demonstrations, illustrated by plates, models, and dissections. During the Second year especial attention is devoted to Applied and Surgical Anatomy, and the relations of parts and organs in the various regions of the body are referred to, and their importance in the operations is emphasized and explained. In the dissecting room the student is required to carry on his work with neatness and precision, under the supervision of the Demonstrator, thus acquiring that familiarity with the use of instruments which is essential to the practitioner. The new dissecting room is fitted with all modern conveniences, and is under the personal supervision of the Professor of Anatomy. The dissections are made under the direction of the Demonstrator of Anatomy, who will assign the parts to students and give all necessary assistance and advice. Abundance of material is furnished students at cost.

## Histology and Embryology.

Dr. Bates. *One hour a week.*

These subjects are taught by lectures and demonstrations, and in the case of Histology by laboratory work upon the primary tissues and the minute anatomy of these organs, an autoptic knowledge of which is necessary for the clear comprehension of the more common pathological conditions. The course in Embryology is comparative, the endeavor being to throw light upon not only those points which are of value in Obstetrics, but to render more easy of comprehension the structure and arrangement of the various organs, cranial nerves, eye and ear, uro-genital system, and other subjects which not infrequently cause the student no little perplexity. The laboratory of the department is well equipped with microscopes, microtomes, reagents, etc., as well as with slides, diagrams, and material for student work. In Embryology, facilities are afforded for research work for all who are prepared to carry on investigation, and graduate work will be outlined upon application to the instructor.

### Physiology.

PROFESSOR NOTT.<br>
DR. PEARCE. *Three hours a week.*

This fundamental branch is taught by lectures and recitations. Lectures will be given on the chemical constituents of the body, food in its relation to digestion, secretion, absorption, and excretion, blood and its circulation, respiration, animal heat, nutrition, nervous system, and special senses.

Recitations will be given on the subject matter taught. This branch will be taught through the entire course.

### General Chemistry.

PROFESSOR PITKIN. *Five hours a week.*

This course consists of Descriptive Chemistry and Qualitative Analysis, with so much of Theoretical Chemistry as is necessary for a proper understanding of the subject.

The classification of the carbon compounds, also, is taken up at considerable length, and special reference made to those which are of interest in the study of medicine. The instruction is by lectures, recitations, and practical work by the students in the laboratory. Much attention is given to Qualitative Analysis, both for the sake of the valuable training which it imparts and the knowledge of Chemistry which is incidentally gained. The importance of this knowledge is evinced by the fact that it is the only non-professional subject which is required in most medical schools. The aim is to impart such information in Chemistry as is necessary to the intelligent physician. At the same time any who wish to pursue the study further than is required of every graduate may do so by special arrangement.

### Materia Medica and Therapeutics.

| | |
|---|---|
| PROFESSOR WHEATLEY.<br>DR. ROGERS. | *Three hours a week.* |

Instruction in this department consists of lectures and recitations, three hours a week during the year. Medicines will be exhibited as far as possible. Therapeutics will receive especial attention.

The metric system will be taught, and the ability to write prescriptions in both the old and new systems will be insisted upon.

A reasonable amount of time will be devoted to the late additions to the Pharmacopœia.

### Medical Chemistry.

| | |
|---|---|
| PROFESSOR AUSTIN.<br>DR. THORPE. | *Four hours a week.* |

Owing to the increased facilities afforded by the management of the school, the scope of instruction in this subject has been largely increased this year, so that now there is offered, in addition to lectures and recitations, practical work in urinalysis, including careful investigation with the microscope, analysis of bile, gastric juice, saliva, blood, and drinking water. Quantitative analysis, in so far as it pertains to these subjects, is conducted by the students in the laboratory, and the results obtained are carefully filed for future reference. Photo-micrographs have been largely used as a means of familiarizing students with the appearances of microscopic objects. The latter half of the year is devoted to toxicology, and students are required to examine poisons, not only in their pure state but mixed with organic matter; to which has been added this year the examination of various food stuffs which are commonly adulterated. At each examination a written analysis is required of a specimen of milk, urine, and a poison.

### Pathology.

PROFESSOR DUDLEY. }
DR. BROWN. } *Two hours a week.*

Instruction in this department will consist of lectures, recitations from text-book, and practical work in the laboratory. Each student, before taking an examination in Pathology, will be required to perform satisfactory laboratory work. To those students who do not possess a microscope, will be loaned one of those belonging to this department at a nominal rental.

It will be the aim to make clear the importance of a thorough knowledge of the causes, course and results of pathological processes, giving frequent illustrations by morbid specimens.

### Bacteriology.

DR. F. B. BROWN. *Five hours a week.*

The course in Bacteriology consists of twenty hours for each student in the laboratory, where the more important micro-organisms are lectured upon and the general bacteriological technique is taught. The laboratory is well equipped with apparatus for the cultivation and observation of bacteria. The process of growth, upon culture media and staining of the different species, is especially dwelt upon. The student is furnished with a Leitz microscope at a moderate cost; and the school has added several Oil Immersion lenses for the use of this department this year.

### Theory and Practice of Medicine.

PROFESSOR HALL. }
DR. CLARK. } *Four hours a week.*

This course consists of two lectures each week by Professor Hall, covering the whole ground of general medicine, comprising in all sixty lectures. The didactic lectures of this course are fully exemplified by cases presented in the course of clinical medicine. It is considered necessary for the student to be well founded in the theory of medicine before taking up to any great degree the bed-side study of disease.

### Clinical Medicine.

PROFESSOR HILDRETH.
DRS. FEARING and WHITE. } *Two hours a week.*

Instruction in this department is given by clinical lectures, visits to the dispensary, and other exercises. Students are furnished cases and required to report upon them. Auscultation and Percussion and Laryngoscopy will be taught both theoretically and practically. The subject of diagnoses and the writing of reports of cases will also receive especial attention.

### Neurology.

PROFESSOR WEBBER. *Two hours a week.*

There will be two lectures each week, during the second term, upon diseases of the nervous system and mental diseases. As preparatory to these, there will be a brief review of the anatomy and physiology of the nervous system so far as necessary to understand the relations of the symptoms to organic changes in the nerve centres. The anatomy of the brain will be demonstrated with special reference to localization of cerebral diseases. The lectures will be both clinical and didactic, and will be illustrated by diagrams, photographs, and microscopic preparations.

### Mental Diseases.

PROFESSOR CHANNING.

Instruction in this branch will consist of a course of twelve lectures so arranged as to cover the whole subject of mental diseases. The lectures will be of a practical nature and will be adapted to the requirements of the general practitioner.

### Diseases of Children.

PROFESSOR WILLIAMS.
DRS. WHITE AND STOWELL. } *Two hours a week.*

Instruction in this department will consist of lectures, clinical teaching, and clinical conferences, embracing the anatomy, hygiene, and diseases of infancy and childhood. The clinical advantages offered to students in this department are very great, and the number of cases shown is large and varied.

Instruction in the contagious diseases of childhood will be given by Dr. Stowell, and an opportunity will be afforded the students to observe this class of diseases at the homes of the patients.

Dr. White will give a course of didactic lectures at the College, during which, attention will be paid to the peculiarities of organization and function incident to the period of infancy and childhood, and the subject of infantile feeding will be thoroughly taught, and the methods practically illustrated. The hygiene of infancy will also be considered.

### Electro-Therapeutics.

DR. MORSE. *One hour a week.*

In this department will be given a course of lectures involving a study of the properties and of the effects upon the system of the galvanic, the faradic, and the static currents. The rapid advances made within recent years in the application of electricity in surgery, gynæcology, and neurology, as well as in general diseases, make it play an important part in modern diagnosis and therapeutics. The aim of the instruction will be to impart a knowledge of the subject based upon recent investigations and to point out the wide range of usefulness of this important remedial agent, at the same time keeping within conservative limits.

### Legal Medicine.

PROFESSOR DURELL. *One hour a week.*

The course in Legal Medicine consists of one lecture each week during the first term, and will include all of the subjects which are usually included under the head of medical jurisprudence, together with a thorough course in the making of medico-legal autopsies, with as many practical demonstrations as possible. The duty of a physician to the Commonwealth, and his rights, both as a medical expert and as an ordinary witness, will be explained.

### Surgery.

Professor Chipman. *Three hours a week.*

Two lectures and one recitation will be given weekly during the first term. In the second term there will be two lectures each week by Professor Chipman, and one recitation and lecture given by the assistant, Dr. Raddin. A considerable portion of the surgical course is devoted to pathology, for the reason that if students do not become well grounded in it during their college course they are very unlikely to take it up after becoming occupied with the details of practice. The course in operative and minor surgery is very thorough, and includes all the usual operations upon the cadaver. Material for the illustration of this course is abundant, and students are given opportunities to operate upon the cadaver. In the department of principles and practice of surgery, particular attention is paid to the subject of diagnosis, and all didactic teaching upon the various branches of surgery is abundantly illustrated in the clinical material furnished by the several hospitals and dispensaries of the city.

As in the past, it will be the aim to make the Surgical Clinics of the greatest value to the student. The subject of Antiseptic Surgery in all that pertains to the knowledge and direct application of the same will be fully illustrated and shown as far as practicable. Fractures and dislocations will be treated by a thorough course of lectures and illustrations. The various fractures and dislocations will be illustrated by a specially prepared skeleton. The employment of the various means for the reduction of dislocations and the preparation of splints and other surgical appliances will be taught in the lecture room.

### Clinical Surgery.

Professor Smith. *Six hours a week.*

The exercises in this department are held mostly at the Boston City Hospital, the Boston Dispensary, and the Suffolk Dispensary, and consist of demonstrations before the class of cases illustrative of surgical pathology. At the hospital cases are obtained for study both from the out-patient department and from the wards. The very large number of accident cases received at this institution affords an unusual opportunity for the study of this branch of the subject, which is so important for the average practitioner of medicine. Each student is enabled to make a personal examination of the patient, and great care is exercised in teaching proper methods of investigation, and in correcting faulty, illogical, or inconsiderate habits of inquiry or physical examination.

The clinical exercises are supplemented by one conference each week at the school, at which, after a review of the more important cases previously examined at the hospital, written reports of cases, previously assigned to Senior students, are read and defended before the class. Besides the attendance at the hospitals on public operating days, the members of the Senior class will be permitted, in sections, to attend a large variety of surgical operations, and thus become practically familiar with all the procedures of modern surgical technique.

### Otology.

PROFESSOR JACK. }
DR. WEBSTER. }
*Two hours a week.*

Instruction in this department will consist of lectures and clinical teaching Clinics will be held at the Massachusetts Charitable Eye and Ear Infirmary where nearly five thousand patients with ear disease are annually treated.

### Genito-Urinary Diseases.

DR. RADDIN.

The various diseases of the Genito-Urinary system will be considered and illustrated by cases as far as practicable.

### Diseases of the Rectum.

DR. OTIS.

Instruction in this department will be given by Dr. Otis at the Boston Dispensary.

### Ophthalmology.

PROFESSOR TENNEY. *One hour a week.*

The instruction in this department will be of the most practical character, being designed to prepare the student to treat such diseases of the eye as will be met with in general practice. The lectures will be fully illustrated by drawings and apparatus, and everything set forth in the didactic lectures will, as far as is practicable, be again brought to the attention of the student at the Dispensary, where clinical material is amply sufficient for the purpose.

### Laryngology.

DR. BOARDMAN.

The Department for Diseases of the Throat and Nose at the Boston Dispensary is open to students during the service of Dr. Boardman who will give practical instruction in Rhinoscopy and Laryngoscopy.

### Obstetrics.

PROFESSOR JOHNSON. }
DR. DERBY. } *Three hours a week.*

The instruction in Obstetrics will consist of lectures illustrated by plates and manikins, with recitations, three times a week. Especial stress is put upon diagnosis, the mechanism of labor, and care during convalescence. So far as possible, the various operations will be demonstrated upon the cadaver. Cases of Obstetrics will be furnished students under the charge of the Professor and Dr. Derby.

### Gynæcology.

PROFESSOR CUSHING. *Three hours a week.*

Instruction is given both by lectures and by clinical teaching. Professor Cushing lectures once each week to the Senior class, and twice weekly, sub-divisions of the class receive practical instruction at the Dispensary from Instructor Cumston and at the Free Hospital for Women by Instructor Derby. Once each week a quiz is held by Assistant Cutler on the lectures of Dr. Cushing. Arrangements have been made, by which students of the Senior class, who wish to continue their studies after graduation, may witness operations in the hospital services of Dr. Cushing.

Dr. Holden has also kindly consented to continue to give clinical instruction to a limited number of students at the Staniford Street Dispensary.

Courses of instruction are open to the students at the clinics of the Free Hospital for Women, on payment of a moderate fee.

## TEXT-BOOKS.

The first book mentioned is preferred as a text-book, the others being recommended as collateral reading.

**Anatomy**: Gray, Quain, Weisse, Holden, Morris, Cunningham's Dissector.

**Physiology**: Kirkes' Handbook (13th edition), Landois and Sterling, Martin's Human Body, Flint, Foster.

**General Chemistry**: Witthaus (last edition), Remsen's Laboratory Manual, A. H. Elliott's Qualitative Analysis.

**Medical Chemistry**: Tyson on the Urine, Purdy, Roberts on Renal and Urinary Diseases.

**Toxicology**: Reese on Medical Jurisprudence and Toxicology-Wormley on Micro-Chemistry of Poisons.

**Materia Medica and Therapeutics**: Bartholow (8th edition), Shoe, maker (3d edition), Hare, Wood, United States Dispensatory (1890), Gerrish's Prescription Writing.

**Pathology**: Greene, Warren, Ziegler.

**Bacteriology**: Woodhead, Sternberg.

**Obstetrics**: Lusk, Playfair, Cazeaux, Winckle.

**Gynæcology**: Diseases of Women by A. Martin, American Text-Book of Gynæcology, Pozzi.

**Surgery**: American Text-Book of Surgery, Treves, Ashurst, Wyeth.

**Practice of Medicine**: Osler, Pepper.

**Clinical Medicine**: Osler's Practice of Medicine.

**DaCosta's Medical Diagnosis**: Flint's Practice of Medicine. Flint's Manual of Percussion and Auscultation.

**Neurology**: Gower, Dana, Gray.

**Mental Diseases**: Cloustin, Spitzka.

**Pedriatrics**: Smith's Diseases of Children, Keating's Cyclopedia of the Diseases of Children.

**Ophthalmology**: De Schweinitz, Nettleship, Noyes.

**Medical Dictionary**: Dunglison.

# General Information.

## SESSIONS OF THE SCHOOL.

The annual course of lectures begins on the last Wednesday in September of each year, and continues until the last Wednesday in May.

There are no exercises at the school during the week of the Christmas vacation, nor upon Thanksgiving Day, or Patriots' Day.

The next annual course of lectures (1896-97) will commence on Wednesday, September 30, 1896, and continue until Wednesday, May 26, 1897.

## STANDING AND CERTIFICATES.

Graduates of other regular medical schools in good standing may receive the degree of this school after attending one course of lectures and passing the examinations of the Senior year. It is understood that attendance upon a course of lectures requires actual presence at a majority of the exercises of the session.

Students who do not wish a degree will be received for any portion of the course. Any student may obtain a certificate of work done during his period of connection with the school.

The expenses of living in Boston vary according to the habits and desires of students, and need not exceed those in small cities and villages. Good board, including room, fire, and light, can be obtained near the school at from $4 to $7 per week. Near the school building are several excellent boarding places charging moderate prices. Students will not be allowed to occupy rooms in the city that are not approved by the Faculty.

Requests for the Annual Announcement and all other communications relating to the business of the school should be addressed to the Secretary, Charles P. Thayer, M. D., 74 *Boylston Street*, *Boston*, *Mass.*

## CLINICAL ADVANTAGES.

Boston, as the largest city in New England, offers unusual facilities to the student of medicine. The amphitheatres of the Boston City Hospital, the Massachusetts General Hospital, the Massachusetts Charitable Eye and Ear Infirmary are open to students and opportunity is thus afforded for witnessing the more extensive surgical operations.

Clinics are held at the Boston City Hospital, the Massachusetts Eye and Ear Infirmary, and at the Boston Dispensary, which latter, as the largest medical charity in Boston (42,587 cases were treated last year), affords an unsurpassed field for familiarizing the student with the various forms of disease. Members of the medical and surgical staff are also connected with various other institutions among which may be mentioned: the Chelsea Hospital, the Somerville Hospital, the Cambridge Hospital, the Woman's Charity Club Hospital, the Free Hospital for Women, and the Marcella-St. Home, and so far as possible the material thus afforded will be utilized for the benefit of the students.

## EXAMINATIONS.

The examinations are held in the College Building at the opening and close of the regular course of lectures, and are in writing. Those at the opening of the course in the Fall are for those commencing the study of medicine, and for students from other colleges who apply for advanced standing; also for those who have not passed the Spring examinations.

Examinations at the close of the course in the Spring are as follows: —

*Freshman Year:* Descriptive Anatomy, Histology, including Embryology, Physiology, General Chemistry, and Hygiene.

*Second Year:* Applied Anatomy, Materia Medica and Therapeutics, Pathology, Medical Chemistry and Toxicology and Bacteriology.

*Third Year:* Theory and Practice of Medicine, Surgery, Obstetrics, Pediatrics, Neurology, Gynæcology, Mental Diseases.

*Senior Year:* Clinical Medicine, Clinical Surgery, Clinical Obstetrics, Clinical Gynaecology, and two of the following elective subjects: Electro-Therapeutics, Diseases of Rectum, Genito-Urinary Surgery, Clinical Pediatrics, Legal Medicine, Ophthalmology, Otology and Laryngology.

The examination in Bacteriology takes place immediately at the close of the course in that study.

The examination in Obstetrics is optional to students of the Middle year.

Students are eligible for their examinations as follows: those of the Freshman year at the end of first year of attendance; those of the Second year at the close of the second year's course, provided they have passed a majority of the Freshman examinations; those of the Third year at the close of the third year's course provided they have passed all of the Freshman and a majority of the Second year examinations. Those of the Senior year at the close of the fourth year's course, provided they have passed all of the Freshman and Second year examinations, and a majority of those of the third year.

## EXPENSES.

### Freshman Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Demonstrator fee | 5.00 |
| Laboratory fee | 5.00 |
| General lecture ticket | 100.00 |

### Second Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Laboratory fee | 5.00 |
| General lecture ticket | 100.00 |

### Third Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| General lecture ticket | 100.00 |

### Senior Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| General lecture ticket | 50.00 |
| Graduation fee | 30.00 |
| Ticket admitting to the four years' lectures (when paid in advance) | 300.00 |
| Instruction in a single branch | 40.00 |
| Graduates of other schools | 50.00 |
| Dissecting material | At cost. |

For the purpose of encouraging thoroughness of medical education, students now connected with the school voluntarily electing to pursue the four-years course, will be received for the fourth year at a nominal rate.

# THE BROMFIELD-PEARSON SCHOOL.

# Bromfield-Pearson School.

## BOARD OF INSTRUCTION.

ELMER H. CAPEN, D. D., PRESIDENT.

GARDNER C. ANTHONY, A. M., DEAN,
*and Professor of Technical Drawing.*

FRANK T. DANIELS, A. M. B.,
*Instructor in Drawing.*

FRANK G. WREN, A. B.,
CHARLES G. JORDAN,
*Instructors in Mathematics.*

CHARLES ST. CLAIR WADE, A. M
*Instructor in French.*

GEORGE H. FURBISH,
*Instructor in Woodwork and Foundry Work.*

—— ——,
*Teacher of Forging.*

HORATIO W. MYRICK, A. M. B.,
*Instructor in Machine Work.*

## STUDENTS.

| | |
|---|---|
| Child, Henry T. | *Medford.* |
| Cooper, Orville | *Pictou, Ontario, Can.* |
| Cummings, Allen | *Woburn.* |
| Donohoe, Charles M. | *Lynn.* |
| Gibson, E. Eugene | *Cherry Valley, Ontario, Can.* |
| Gough, Charles E. | *Hingham.* |
| Locke, William L. | *Watertown.* |
| McDuffee, Edgar J. | *Bellows Falls, Vt.* |
| Phipps, Ross E. | *Watertown.* |
| Polk, Robert H. | *Towanda, Pa.* |
| Tibbetts, Fred E. | *West Somerville.* |
| Wallace, Edward D. | *Milford, N. H.* |

# The Bromfield-Pearson School

Is a department of Tufts College, designed to provide a special course of technical instruction to such as may be qualified by previous education and maturity of mind to fit for either of the Engineering Courses of the College in one year, or to pursue with equal advantage the special two-years course of the school.

The first year may be taken as preparatory, either to the Engineering Departments of the College, or to the technical course of the school.

The course for the second year is arranged to meet the wants of those who are unable to pursue their studies for a longer period, but require the essentials of an engineering education presented in a concise and practical manner, to include elementary mathematics, mechanics, and technical drafting.

## ADVANTAGES TO BE DERIVED FROM THE COURSE.

Students may prepare for the Engineering Departments of the College in less time than by the ordinary fitting school, as it is possible to take all the mathematics of a high school course in one year, beside the necessary preparation in language.

Students who pursue the preparatory course, and complete the work satisfactorily, will be admitted to College on certificate.

Save in the elementary instruction in mathematics and English, the courses pursued are, in most respects, identical with those of the College.

Students who are partially prepared to enter the College may pursue advanced work in anticipation of their engineering studies, and thus shorten their College course.

Students who may pursue the two-years course, and later decide to enter the College, will receive full credit, by the College, for all work satisfactorily performed which may be equivalent to that required in the Engineering department.

The association with College work and College men places the student in better position to pursue his advanced studies.

The Gymnasium, Library, and Lecture courses of the College are open to students of the school.

The mechanical equipment of the school is such as to afford exceptional opportunities for pursuing the practical courses in Carpentry, Moulding, Pattern work, Forging, and Machine work.

## THE BUILDING.

The Bromfield-Pearson Building is a three-story building 100x50 feet, comprising drafting and recitation rooms, offices, and shops, for conducting the special courses of the school, and the department of drawing and shopwork in the College. The drafting rooms are three in number, and separated from the noise and vibration of the shops. Abundant and uniform light is provided, rooms on the upper floor having large skylights on the northerly side. There is a forge, moulding, pattern, and machine shop. These are equipped with modern tools and in the most approved manner. Each student is provided with a separate bench, tools, forge, lathe, etc. A twenty-five horse-power Buckeye engine furnishes the motive power for the shop, and also serves for experimental work in the study of the steam engine. One room is set apart as a study for such of the students as do not room at the College, and others who desire to prepare their lessons at the building.

# Course of Study.

## FIRST YEAR.

### Preparatory Course.

ALGEBRA is begun, and during the first three quarters will include quadratics, radicals, arithmetical and geometrical progression, together with the binomial theorem for positive exponents.

GEOMETRY is begun during the first term, and continued throughout the year. The course includes plane geometry and all of solid save spherical.

PLANE TRIGONOMETRY is taken during the fourth quarter.

ELEMENTARY MECHANICS is pursued by the special engineering students during the second term.

ENGLISH GRAMMAR AND COMPOSITION is pursued throughout the year.

FRENCH for the entire year is required of those who are preparing for a College course. Special students may elect.

DRAWING (Freehand) comprises the course required for entrance to the College, together with technical sketching and lettering.

DRAWING (Technical) includes the use of instruments, geometrical problems, elementary problems in projection (orthographic and isometric), tracing, blue printing, etc. Both this and the course in freehand are identical with the College course in drawing, and all (or a part) may be omitted by students fitting for College.

DESCRIPTIVE GEOMETRY may be taken by such students as are sufficiently prepared to enter the College class. This is pursued during the second term, and is required of those taking the two-years course.

Shop Work is elective, and may be taken at any time when it will not interfere with required work.

### Electives.

Those who may be sufficiently prepared in any of the above studies may elect any of the following: —

Preparation in elementary algebra, as above, will admit to course in College algebra.

Preparation in elementary algebra, plane and solid geometry, will admit to Freshman mathematics.

Preparation in elementary mechanics will admit to course in physics, consisting of lectures and laboratory work.

As the instruction in drawing is largely individual, the student may take the grade for which he is prepared.

## SECOND YEAR.

### Special Engineering Course.

This part of the course is intended only for those who do not enter the Engineering Department of the College. Students will, however, be admitted to College classes for which they may be fitted.

Advanced Algebra and Spherical Geometry are pursued with the College classes during the first term.

Analytical Geometry is taken during the first term.

Calculus (Differential and Integral) is studied during the second term. This is elementary, and designed to give the student such a knowledge of the practical use of the science as shall enable him to read, in an intelligent manner, books involving its use.

Applied Mechanics is pursued for one term, and the subjects assigned for design are such as to afford a practical application of the theory. This includes the subject of Graphic Statics.

MACHINE DRAWING. Much attention has been given to the method of presenting this work to enable the student to gain, in the shortest time, a comprehensive knowledge of the practical methods for the graphic representation of mechanical ideas. This work is conducted in precisely the same manner as in a well-organized drafting room. It consists largely of freehand sketches and plainly finished drawings, made according to the most approved systems. Each student is now provided with a time card on which a record is kept of the time employed in the execution of all drawings. It is not only necessary that drawings be well made, and accurate, but that a reasonable time be employed in their execution.

KINEMATICS. Under this head, the subjects of cams, gearing, links, etc., are treated, and much stress is laid on the practical application of the same. It is taught by means of graphic problems and lectures.

MACHINE DESIGN is begun as soon as the student has become proficient in the preceding courses, and has acquired neatness, accuracy, and rapidity of execution. He is now encouraged to think and act for himself, thereby developing his intuitive ability and self-reliance. Many of the methods used in connection with this study are believed to be original with the school, and have resulted in a great saving of the student's time.

STEAM ENGINE. A brief course in the theory of steam is pursued in connection with the problems for design of Boilers and Engines. The subject of VALVE GEARS is considered at this time. The student is also taught to apply the INDICATOR and measure the power and consumption of water. Excellent opportunities are afforded at the College for this work which is of the most practical character.

MOULDING. A short but comprehensive course in the foundry is required of all second-year students. The special object in this training is to acquaint the future designer with the methods employed in the modern foundry, and enable him to judge as to the best methods of constructing patterns. This work is of a very practical nature, consisting of the moulding of a great variety of patterns, the making of cores, and, finally, casting the more important pieces.

SURVEYING. Such practice in the use of transit and level is afforded the student as shall familiarize him with their use, and enable him to make a simple survey.

### Electives.

The following courses may be pursued in connection with the foregoing, when time, and previous preparation, will permit:—

PATTERN MAKING. This course includes Carpentry, Turning, Pattern Making and Moulding. *Six hours a week* (*first half-year*); *three hours a week* (*second half-year*).

FORGING. In this short course it is designed to make the student familiar with the metals and the method of working them. The exercises include heating, bending, drawing, upsetting, welding, tempering, case hardening, etc. *Three hours a week* (*second half-year*).

MACHINE WORK. Vise work in iron, including surface chipping, squaring and fitting, keyseating, scraping and polishing. The machine practice consists not only in the operation of turning, planing, drilling, boring, etc., but in a careful study of the machines, their efficiency, and capabilities. *Six hours a week* (*second half-year*).

PHYSICS. (See, under Departments of Instruction, the College of Letters, Physics.) *Three hours a week for the year.*

PHYSICAL LABORATORY. (See, under Departments of Instruction, Physics.) *Six hours a week* (*second half-year*).

CHEMISTRY. (See, under Departments of Instruction, Chemistry.) *Three hours a week for the year.*

SURVEYING. This is the regular work in Surveying for Engineering students in the Sophomore year. *Four hours a week* (*first half-year*).

# General Information.

### REQUIREMENTS FOR ADMISSION.

Students will be required to satisfy the instructor in charge of their ability to pursue the studies which they may elect. This may be done by certificate from a school previously attended, or by examination, oral or written, as may be deemed necessary.

In examinations, either for entrance or for advanced standing, the students are considered individually, rather than collectively, in order to give the instructor the fullest knowledge of the standing of the student, and enable the latter to take such a place in the school as shall best fit him for his future work.

### REGULATIONS OF THE SCHOOL.

Students are subject to the rules governing College students.

Prompt and regular attendance, together with a faithful performance of all duties, is required.

Polite and orderly conduct is insisted upon, and any damage to school property must be made good by the student causing it.

Students who may elect any of the subjects in the regular College courses must attain at least seventy per cent in those studies in order to remain with the class.

No change in program is permitted during the term.

Only such students are encouraged to enter as may be thoroughly in earnest, and desire to make the most of their opportunities. To such, the institution offers exceptional opportunities.

Certificates of proficiency are given the special engineering students who shall complete either of the courses comprised in one year. These certificates state the subjects which have been completed according to the requirements of the institution. No diploma is given, or degree conferred.

The tuition fee is one hundred and twenty dollars per year, payable as follows: Sixty dollars on or before the 5th of October, and the balance on or before the 15th of March.

No part of the tuition fee will be refunded to pupils who for any reason withdraw from the school before the close of the term for which the fee is paid.

Students board in commons at $3.50 per week; in private families at $3.50 to $5.00 for table board and $1.50 to $2.00 for furnished room. Other expenses vary with the economy of each student. Students living in the college dormitories furnish their own rooms.

The following estimates represent the fixed annual expenses: —

| | | |
|---|---|---|
| Tuition | $120.00 | $120.00 |
| Half room-rent | 15.00 | 75.00 |
| Care of rooms | 10.00 | 10.00 |
| Board, $3.50 to $5.00 a week (36 weeks) | 126.00 | 180.00 |
| Physical training | ——— | 10.00 |
| Total | $271.00 | $395.00 |

For other information address, Gardner C. Anthony, Dean of the Bromfield-Pearson School, *Tufts College, Mass.*

# DEGREES AND HONORS

## 1894-95

# Thirty-Ninth Annual Commencement.

JUNE 19, 1895.

## DEGREES CONFERRED.

### In Course.

BACHELORS OF ARTS.

LOUIS WALES ARNOLD (*extra ordinem*).
EUGENE AVERELL.
CHARLES NEAL BARNEY (*with Honors in History*).
FRANK HARDING CHESSMORE.
CHARLES DOW CLARK (*with Honorable Mention in English Literature*).
EDWARD CHANNING CRAIG (*with Honorable Mention in French*).
CLARENCE LIVINGSTONE EATON.
HAROLD BARTLETT FOBES (*with Honorable Mention in Political Science and English Literature*).
HARRY CHARLES FOLSOM (*with Honors in Greek and Honorable Mention in English Literature*).
HENRY PENNELL FRANK (*with Honors in Physics and Political Science*).
MELVIN MAYNARD JOHNSON (*extra ordinem*).
ORLANDO FAUKLAND LEWIS (*with Honors in German and French*).
FRANK MARTIN LYNDE.
JOSEPH HENRY SAUNDERS.
JAMES FITTS SHELDON.
ROBERT BAXTER SMITH.
WILLIAM RISBY WHITEHORNE (*with honors in Mathematics*).
GUY MONROE WINSLOW (*with Honors in Biology*).

BACHELORS OF PHILOSOPHY.

EDWARD PERKINS CLARKE (*with Honorable Mention in French*).
WILLIAM ROGER DUNHAM.
WILLIAM HOLLIS GODFREY.

GEORGE PRESTON IRELAND (*with Honorable Mention in Mathematics*).

CHARLES LUCIUS RICKETTS (*with Honorable Mention in Political Science and English Literature*).

### BACHELORS OF CIVIL ENGINEERING.

ARTHUR LINCOLN GEORGE.
CHESLEY METCALF JOHNSTON.
CHARLES HARRISON PAGE.

### BACHELORS OF DIVINITY.

ARTHUR ADOLPHUS BLAIR.
THOMAS BUTLER.
ALFRED JAMES CARDALL.
JOSEPH FERNALD COBB.
CURTIS HOYT DICKINS.
TOM ROSCOE.
ASHLEY AUBURN SMITH.
JAMES DANNALS TILLINGHAST.
CHARLES HENRY WELLS.

### DOCTORS OF MEDICINE.

WILLIAM HOWARD BAILEY.
WILLIAM HENRY BERTRAM.
HARRY EVAN BONYMAN.
MARY FRANCES BUTTERWORTH.
BESSIE DELANO DAVIS.
JANE LOUISE DENNIS.
ANNA MARY DORR-BRYANT.
MARIA EMMA DREW.
WILLIAM ERNEST FLEET.
ANNA CARVILLE HANDS.
LAURA ANN CLEOPHAS HUGHES.
EUNICE DRAPER KINNEY.
GEORGE ALBERT LEAVITT.
WILLIAM FRANCIS PATTERSON.
STEPHEN AUGUSTUS PEDRICK.
CHARLES WILLIS PUTNAM.

ASA PINGREE REED.
WILLIAM HENRY RUSSELL.
ARTHUR GILMORE SCOBORIA.

### MASTERS OF ARTS.

ISAAC WALLACE CATE.
JOSEPH FERNALD COBB.
HENRIETTA NOBLE DURKEE.
FREDERIC COURTLAND KENYON.
WILLIS JAMES PROUTY.
FRED HENRY WEBSTER.
WARREN SAMUEL WOODBRIDGE.

### ELECTRICAL ENGINEER.

ADELBERT HARLAND MORRISON.

### CIVIL ENGINEER.

FRANCIS OTIS MELCHER.

### DOCTOR OF PHILOSOPHY.

FREDERIC COURTLAND KENYON (*in Biology*).

## AWARDS OF PRIZES, 1894-95.

### Goddard Prize in Latin.

Florence Gertrude Dyer.

### Goddard Prize in Mathematics.

Beatrice Alexandra Grant and Willie Parker Jones.

### Greenwood Prize Scholarship in Oratory.

Edward Channing Craig.

### Rhetorical Prizes.

*First Class** — (1) William Roger Dunham.
(2) Charles Dow Clark.
*Second Class* — (1) Alaric Bertrand Start.
(2) Reignold Kent Marvin.
*Third Class* — (1) Rollin Brewster Sanford.
(2) Florence Ledyard Cross.

### Entrance Examination Prizes, 1895-96.

Second to Grace Evelyn Goudey; no first prize awarded.

### Greenwood Prizes in Oratory in the Divinity School.

Herbert Elmon Benton, A. B., Albert Eugene Bartlett, and John Eills.

### Perkins Prizes for Extemporaneous Preaching in the Divinity School.

Ashley Auburn Smith and Alfred James Cardall.

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* The classification is based on the number of term hours done in Oratory.

# CATALOGUE

OF

# TUFTS COLLEGE

1896-97

BOSTON:
THE BARTA PRESS,
144 AND 148 HIGH STREET,
1896.

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# Calendar.

## 1896.

| | | |
|---|---|---|
| SEPT. | 17. | College year begins (all departments except the Medical School), Thursday morning. |
| SEPT. | 20. | Russell Lecture, Sunday, 10.30 A. M. |
| NOV. | 25. | Thanksgiving recess begins, Wednesday at 1 P. M, |
| NOV. | 29. | Thanksgiving recess ends, Sunday evening. |
| DEC. | 23. | Christmas recess begins, Wednesday at 1 P. M. |

## 1897.

| | | |
|---|---|---|
| JAN. | 6. | Christmas recess ends, Wednesday evening. |
| FEB. | 6. | End of first half-year, Saturday. Plans of study for the second half-year must be reported before noon of this day. |
| FEB. | 8. | Second half-year begins, Monday. |
| MARCH | 27. | Spring recess begins, Saturday at 1 P. M. |
| APRIL | 4. | Spring recess ends, Sunday evening. |
| MAY | 21. | Prize Reading in the College of Letters, Friday. |
| JUNE | 1. | Prize Reading in the Divinity School, Tuesday. |
| JUNE | 11. | Class Day, Friday. |
| JUNE | 12. | Baccalaureate Sermon, Sunday, 4.30 P. M. |
| JUNE | 16. | Forty-first Annual Commencement, Wednesday. |

### *First Examinations for Admission to College of Letters.*

| | | |
|---|---|---|
| JUNE | 17. | Algebra, 9 to 10.30 A. M. |
| | | English, 10.30 A. M. to 12.30 P. M. |
| | | Arithmetic and Plane Geometry, 2 to 4 P. M. |
| | | Physics and Drawing, 4 to 5 P. M. |
| JUNE | 18. | Latin and Advanced Mathematics, 9 to 11 A. M. |
| | | Elementary German and French, 11 A. M. to 12.30 P. M. |
| | | History, 2 to 4 P. M. |
| | | Chemistry, 4 to 5 P. M. |
| JUNE | 19. | Greek and Intermediate or Advanced German or French, 9 to 11 A.M. |
| | | Natural History (two subjects), 11 A. M. to 1 P. M. |

## SUMMER VACATION, THIRTEEN WEEKS.

*Second Examinations for Admission to College of Letters.*

SEPT. 14. Algebra, 9 to 10.30 A. M.
English, 10.30 A. M. to 12.30 P. M.
Arithmetic and Plane Geometry, 2 to 4 P. M.
Drawing, 4 to 5 P. M.
SEPT. 15. Latin and Advanced Mathematics, 9 to 11 A. M.
Elementary German and French, 11 A. M. to 12.30 P. M.
History, 2 to 4 P. M.
SEPT. 16. Greek and Intermediate or Advanced German or French, 9 to 11 A. M.
Natural History (two subjects), 11 A. M. to 1 P. M.
Physics, 2 to 3 P. M.
Chemistry, 3 to 4 P. M.

SEPT. 15. Examination for Admission to the Divinity School in Miner Hall, beginning at 9 A. M.
SEPT. 16. College Year begins, Thursday morning.
Registration of all students at Secretary's office.
Major departments and plans of study for the first half-year must be reported before noon of this day.
SEPT. 18. Regular College exercises begin.
SEPT. 19. Russell Lecture, Sunday, 10.30 A. M.
DEC. 22. Christmas recess begins, Wednesday evening.

## 1898.

JAN. 5. Christmas recess ends, Wednesday evening.
FEB. 5. End of first half-year, Saturday.
FEB. 7. Second half-year begins, Monday.

TUFTS COLLEGE is situated at College Hill, four miles from Boston, on the Southern division of the Boston & Maine Railroad. The post-office address is — TUFTS COLLEGE, MASS.

# Historical Sketch.

TUFTS COLLEGE was founded under a charter granted April 21, 1852. Like so many of the endowed colleges of the country, it owed its beginnings primarily to the need of an educated ministry, felt by an important body of Christians. Its work is, however, non-sectarian, a fact amply shown by the membership of its Faculty and student body. The aim of its instruction has been always the pursuit of truth.

The movement resulting in the founding of the College was set on foot in 1847, through the efforts of the Rev. Thomas J. Sawyer, of New York, the Rev. Hosea Ballou, 2d, of Medford, and the Rev. Thomas Whittemore, of Cambridgeport. After much consideration the work of raising a fund of one hundred thousand dollars for a foundation was undertaken, under the direction of the Rev. Otis A. Skinner, of Boston. About sixty thousand dollars was obtained in money. Sylvanus Packard gave his bond for twenty thousand dollars additional, and Charles Tufts gave twenty acres of land on Walnut Hill, embracing the present site of the College. Mr. Tufts announced his intention of increasing his gift of land to more than one hundred acres, and thus became the largest benefactor of the young institution, which accordingly received his name. Mr. Packard was a Boston merchant, who from the beginning made the College a peculiar care, and bequeathed to it his entire fortune, this being the largest gift it has yet received from a single person. Among other benefactors deserving mention, associated with those who may be styled the founders of the College, were Oliver Dean, who gave it ninety thousand dollars, and Thomas A. Goddard, whose gifts, though unobtrusive, were constant, and whose widow has continued the generosity of her husband. Dr. William J. Walker came soon after, with gifts and bequests amounting to nearly three hundred thousand dollars.

Students were first formally admitted in 1855. The only building at that time was the main College building, now known as Ballou Hall. The next building to be erected was a small brick dormitory, now the Library building. The large dormitory known as East Hall was the next addition to the group, and in 1872 West Hall was opened to students. It was ten years before building operations were renewed by the College. The original Faculty numbered five. The first class, of three members, graduated in 1857.

At the outset, provision was made for a course of study leading to the degree of Bachelor of Arts. The only feature of its work peculiar to Tufts College in these years of its beginnings was the attention given to the study of history. The first President of the College, the Rev. Hosea Ballou, 2d, D. D., was likewise Professor of History and of Intellectual Philosophy, and gave instruction in history remarkable alike for its quantity and quality, at a time when the study was hardly recognized in American colleges. Four hours a week for three years was the time assigned to this subject in the curriculum of Tufts College, until the death of President Ballou, in 1861, when, there being no one to take up the work, it dropped from the course.

Dr. Ballou was succeeded in the presidency by the Rev. Alonzo Ames Miner, D. D., LL. D., who was inaugurated in 1862, and continued in office until 1875, resigning in February of that year. In March, 1875, the Rev. Elmer Hewitt Capen, D. D., was elected to the Presidency of the College, vacated by the resignation of President Miner, and he was inaugurated on the second day of June.

Some unclassified students had always been in attendance at the College, and in 1866 the degree of Bachelor of Philosophy was offered to those who should pursue a prescribed course of two years, the object being to provide for those who had been prepared only in English subjects. This course was maintained until 1875, when it was changed to a course of four years. The requirements for admission were then made the same as for the regular course, except that Greek as a condition of entrance was omitted, and an amount of work in French or German, considerably less than its equivalent, was substituted.

The will of Mr. Packard required that a professor of Christian Theology should be maintained from the income of funds bequeathed by him. The Rev. Thomas J. Sawyer, D. D., was elected Packard Professor in 1869. This was the beginning of the Divinity School. In 1882 the school had developed so that its Faculty received a definite organization and Dr. Sawyer became the first Dean, retaining the office until his retirement as Packard Professor Emeritus in 1892. He was succeeded by the present Dean, the Rev. Charles H. Leonard, D. D. From the erection of West Hall until the completion of the separate buildings of the school, the western side of West Hall was occupied by the Divinity School. In 1892, by the gift of Ex-President Miner, the school was provided with a convenient and handsome building, Miner Hall, containing the library, class-rooms, chapel, and reception-room; and at the same time, largely through the efforts of the Dean of the School, the money was obtained to build Paige Hall, a dormitory for students of the Divinity School.

The Engineering courses were begun in 1869 with a department of Civil Engineering. The great development of electrical science was promptly recognized, and a department of Electrical Engineering was opened to students in 1882, a professorship in the subject being established in 1890. This side of the college work had a very rapid development, and in 1894 the field was broadened by the addition of a course in Mechanical Engineering. In these courses an effort has always been made to give thorough practical training. The will of the late Henry B. Pearson, founding the Bromfield-Pearson School, and putting it in the hands of the Trustees of Tufts College to administer, provided a thoroughly equipped building for technical instruction, of great value in the drawing, pattern-making, machine, and forge work, so important to the engineer in any branch. The Bromfield-Pearson building was completed in the fall of 1894.

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1896-97

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*Assistant in Gynæcology.*

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*Lecturer on Methods of Biblical Study.*

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*Lecturer on Character and the Ministry.*

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Professor Knight. Professor Kingsley.

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SHAW, ELIZABETH . . . . *Mattapoisett* . . Metcalf Hall, 15.
*A. B., Smith College,* 1896. *First Year. Biology. Miner Fellow in Natural History.*

WINSLOW, GUY MONROE . . *Barton Landing, Vt.* 105 Porter St., Somerville.
*A. B.* 1895. *Second Year. Biology. Olmstead Fellow in Natural History.*

### Resident Students.

Edwards, John Williams . . *Delaware, O.* . . West Hall, 20.
*B. S., Ohio Wesleyan Univ.,* 1895. *Second Year. Chemistry. Assistant in General Chemistry.*

Lambert, Fred Dayton . . . *Muscatine, Iowa.* . . East Hall, 8.
*Ph. B.,* 1894. *Third Year. Biology. Assistant in Biology.*

Leighton, Virgil Louis . . . *West Falmouth, Me.,* Dean Hall, 9.
*A. B., Tufts,* 1894; *A. M., University of Kansas,* 1895. *Second Year. Chemistry. Assistant in Qualitative Analysis and Assaying.*

Sanborn, Herbert Charles, . *Winchester* .
*Ph. B., Boston University,* 1896. *First Year. Modern Languages.*

## COURSES IN ARTS AND SCIENCES.

In the following list the course pursued by each student is indicated by the italic letters immediately following the name. The abbreviations are as follows: Courses leading to the degree of A. B., *a b;* to the degree of Ph. B., *ph.;* to the degree of S. B.,— in Civil Engineering, *c e;* in Electrical Engineering, *e e;* in Mechanical Engineering, *m e;* and in the first two years of the Engineering Courses, before the differentiation of studies, *e;* to the degree of S. B., through the Science Courses,— in General Science, *sc;* in Biology, *bi;* in Chemistry, *ch;* and Medical Preparatory, *m p.*

[*] The right-hand column contains the college residence of every student having such residence, the neighboring cities of Somerville and Medford being thus included. The middle column records the home address.

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| Brown, Helen Elizabeth, *a b* | *Waltham* | Metcalf Hall, 4. |
| Browning, Charles Augustus, *e e*, | *Somerville* | East Hall, 21. |
| Butterfield, John McArthur, *a b*, | *Revere* | |
| Davis, Horace Amos, *ph* | *Dorchester* | Θ Δ X House. |
| Day, John Boynton Wilson, *a b*, | *Charlestown* | West Hall, 3. |
| Dyer, Florence Gertrude, *a b*, | *Medford* | 9 Everett St. |
| Edmands, John Stetson, *c e* | *Somerville* | 86 Avon St. |
| Fenton, Robert Hall, *c e* | *Willimantic, Conn.* | Δ Υ House. |
| Gale, Frank Randall, *a b* | *Barre, Vt.* | West Hall, 16. |
| Garcelon, Herbert Irving, *m e*, | *W. Somerville* | East Hall, 21. |
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| Hill, George William, *e e* | *Stoneham* | Dean Hall, 12. |
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| Hodge, Edith Louise, *a b* | *Franklin* | Metcalf Hall, 10. |
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| Howe, Wilson Tyler, *c e* | *East Brookfield*, | West Hall, 27. |
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| Lane, Harry Alfred, *c e* | *Foxboro* | Δ Υ House. |
| Parks, Warren Stone, *a b* | *Hudson* | Δ T Δ House. |
| Perry, Carlton Albert, *a b* | *Cooperstown, N.Y.*, | West Hall, 22. |
| Plumb, Max Alaric, *sc* | *Rocky Hill, Conn.*, | West Hall, 2. |
| Putnam, Frank Wendell, *bi* | *Charlestown* | Δ Υ House. |
| Randlett, Fred Morse, *e e* | *Lawrence* | Dean Hall, 10. |
| Richardson, George Edward, *bi*, | *Lowell* | West Hall, 17. |
| Russell, Howard Irving, *e e* | *W. Somerville* | East Hall, 21. |
| Sanford, Rollin Brewster, *a b*, | *Albany, N. Y.* | Θ Δ X House. |
| Start, Alaric Bertrand, *a b* | *Tufts College* | Mr. Start's. |
| Thayer, Arthur Ellis, *e e* | *W. Somerville* | East Hall, 21. |
| White, Winthrop Warner, *a b*, | *Brooklyn, N. Y.* | Dean Hall, 13. |
| Williams, Franklin Bates, *a b*, | *Roxbury* | Dean Hall, 7. |

## Junior Class.

| | | |
|---|---|---|
| Ahern, George Edward, *c e* | *Arlington* | Middle Hall, 5. |
| Anderson, Malcolm Campbell, *a b*, | *W. Somerville*, | 18 Farragut Ave. |
| Andrews, Herbert Woodbury, *e e* | *Lynn* | East Hall, 26. |
| Arnold, John Emerson, *a b* | *Braintree* | Δ Υ House. |
| Avery, Elwood, *a b* | *Everett* | West Hall, 16½. |

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|---|---|---|
| Bancroft, Irving Reed, *ph* | *Woburn* | West Hall, 22. |
| Bartlett, Ethel Townsend, *a b*, | *Somerville* | 113 Highland Ave. |
| Boomer, Perley Eugene, *a b*, | *Medford* | 150 Boston Ave. |
| Burbank, Ralph Lyman, *ch* | *Medford* | East Hall, 27. |
| Capen, Samuel Paul, *a b* | *Tufts College* | 8 Professors Row. |
| Clark, Warren Stewart, *e e* | *St. Albans, Vt.* | West Hall, 7. |
| Cousens, John Albert, *a b* | *Brookline* | Δ T Δ House. |
| Crowley, Daniel Francis, *c e* | *Medford* | East Hall, 21. |
| Daniels, George Emory, *a b* | *Franklin* | Dean Hall, 6. |
| Donaldson, James Frank, *a b*, | *Salem* | West Hall, 28. |
| Evans, Mary Eliza, *a b* | 16 *Wright St., Stoneham.* | |
| Flint, Marion Lenore, *a b* | *Spring St., Bedford.* | |
| French, Edmund Merritt, *c e*, | *W. Hingham* | East Hall, 26. |
| Gifford, Fannie Crocker, *a b* | *Provincetown* | Metcalf Hall, 6. |
| Grant, Beatrice Alexandra, *a b*, | 29 *Pleasant St., Woburn.* | |
| Graves, Wallace Humphrey, *ch*, | *Bangor, Me.* | East Hall, 11. |
| Hammond, Roland, Jr., *a b* | *Brockton* | West Hall, 22. |
| Harwood, George Alec., *c e* | *Cambridge* | West Hall, 16½. |
| Healey, Rolla Edwin, *e e* | *Claremont, N. H.* | Δ T Δ House. |
| Huston, Milton, *ch* | *W. Falmouth, Me.* | East Hall, 9. |
| Johnson, Edward Dunbar, *a b*, | *Methuen* | West Hall, 19. |
| Jones, Guy Edward, *e e* | *Marlow, N. H.* | 7 Clarendon Ave., W. Somerville. |
| Jones, Willie Parker, *a b*, | *Stoneham* | West Hall, 24. |
| Maddocks, John Arthur, *c e* | *Boothbay Harbor, Me.* | West Hall, 29. |
| May, Benjamin Dexter, *a b* | *Hudson* | Δ T Δ House. |
| Merrill, Harriette Johnson, *a b*, | *E. Eddington, Me.* | Metcalf Hall, 11. |
| Mitchell, Stephen Clarence, *e e*, | *Hull* | Dean Hall, 10. |
| Moore, Willis Albert, *a b* | *Melrose* | East Hall, 29. |
| Olmsted, Elmer Sheridan, | *Somerville* | West Hall, 31. |
| Patterson, Walter Arthur, *e e*, | *Waltham* | West Hall, 11. |
| Peirce, Frank Lincoln, *a b* | *Brimfield* | Δ Υ House. |
| Ransom, Clara, *a b* | *Tufts College* | 80 Professors Row. |
| Ransom, William Richard, *a b*, | *Tufts College* | 80 Professors Row. |
| Rowbotham, George Walter, *e e*, | *Boston* | Θ Δ Χ House. |
| Russell, James Porter, *a b* | *Farmington, Me.* | Δ Υ House. |
| Schoolfield, Frank Robert, *e e*, | *Baltimore, Md.* | East Hall, 1. |
| Shaw, Edwin Adams, *c e* | *W. Somerville* | 18 Bellingham St. |
| Small, Sylvanus Griswold, *a b*, | *Baldwinville* | 14 Emery St. |
| Smith, Arthur Garfield, *a b* | *N. Tunbridge, Vt.* | Δ Υ House. |
| Smith, Simeon Conant, *a b* | *Provincetown* | Δ T Δ House. |
| Stebbins, Katherine Louise, *a b*, | *W. Somerville* | 30 Day Street. |
| Sweet, Harold Edward, *a b* | *Attleboro* | Δ Υ House. |
| Titus, Anson Merrill, *c e* | *W. Somerville.* | 10 Raymond Ave. |
| Tousey, Coleman, *a b* | *Tufts College* | 106 Professors Row. |

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|---|---|---|
| Town, Frederic Edward, *c e* | *Washington, D. C.* | East Hall, 1. |
| Welch, Walter Frederick, *a b*, | *Stoneham* | East Hall, 34. |
| Wells, Roy Titus, *e e* | *Foxboro* | Δ Υ House. |
| Whitman, Walter George, *a b*, | *Norway, Me.* | East Hall, 14. |

## Sophomore Class.

| | | |
|---|---|---|
| Barker, Fred Percy, *e* | *Waltham* | Middle Hall, 10. |
| Bartlett, Lewis, *e* | *Marblehead* | East Hall, 7. |
| Bean, Charles Alvin, *a b* | *Hudson* | Dean Hall, 11. |
| Bradbury, Fannie Eliza, *ph* | *Milford* | Metcalf Hall, 3. |
| Brightman, Carl Gordon, *e* | *Round Pond, Me.*, | East Hall, 14. |
| Buss, Arthur Stacey, *e* | *Medford* | East Hall, 13. |
| Carleton, Grace Willis, *a b* | *Wakefield* | Metcalf Hall, 1. |
| Carpenter, Edwin King, *a b* | *West Medford* | East Hall, 13. |
| Christian, Leroy Bernard, *e* | *Auburn, Me.* | Middle Hall, 9. |
| Clapp, Albert Lewis, *ch* | *Marblehead* | East Hall, 7. |
| Clough, Harry Wescott, *a b* | *Lowell* | Dean Hall, 6. |
| Cousens, Kate Elizabeth, *a b*, | *Brookline* | Metcalf Hall, 12. |
| Cowan, Frank Joseph, *a b* | *Farmington, Me.* | East Hall, 31. |
| Cutler, Augustus Leon, *e* | *Wakefield* | West Hall, 5. |
| Davis, Mervin Nathaniel, *e* | *Haverhill* | East Hall, 10. |
| Doane, Ernest Stanley, *ph* | *Marblehead* | Δ Υ House. |
| Eaton, Mary Helen, *a b* | 954 *Main Street, No. Woburn.* | |
| Eaton, Minnie Laurette | *Tufts College* | Rev. Mr. Eaton's. |
| Eveleth, Charles Wonson, *m p*, | *Marblehead* | West Hall, 6. |
| Forster, George Fleming, *a b*, | *Lawrence* | East Hall, 31. |
| Gage, Isaac Bradlee, *a b* | *W. Medford* | Dean Hall, 13. |
| Goudey, Grace Evelyn, *a b* | 53 *Buckman Street, Everett.* | |
| Griffiths, Willis Wentworth, *e*, | *Medford* | East Hall, 6. |
| Griswold, Fred Fay, *e* | *So. Manchester, Conn.* | East Hall, 2. |
| Hall, Samuel Thomas, *e* | *Sharon* | East Hall, 6. |
| Heath, George Byron, *ph* | *Calais, Me.* | West Hall, 30. |
| Holmes, Harry Emery, *e* | *Medford* | East Hall, 6. |
| Howe, Frank Merrill, *a b* | *So. Weymouth* | East Hall, 23. |
| Hunter, Leslie Erastus, *e* | *Essex Junction, Vt.* | East Hall, 32. |
| Kent, Ira Rich, *a b* | *Calais, Vt.* | West Hall, 25. |
| Knight, Isabella Gertrude, *a b*, | *Tufts College*, | 114 Professors Row. |
| Knowlton, Frank Warren, *a b*, | *New Bedford* | East Hall, 15. |
| Lane, Grace Harvey, *a b* | *W. Medford* | 66 Brooks St. |
| Lawrence, Bertha Faustina, *bi*, | *Stowe* | Metcalf Hall, 13. |
| Lewis, Florence May, *a b* | *Main St., Stoneham.* | |
| Litchfield, Harry, *e* | *Fitchburg* | West Hall, 31. |
| Lovering, Frank Woods, *sc*, | *W. Medford* | Dean Hall, 13. |
| Mange, John Isaac, *e* | *Kingston* | East Hall, 4. |

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|---|---|---|
| Marble, Ernest Gilman, *e* | *Methuen* | West Hall, 19. |
| Marvin, Charles Remington, *a b*, | *Roxbury* | West Hall, 25. |
| Mason, William Madison, *ch*, | *Washington, D. C.*, | Θ Δ Χ House. |
| Meader, Edgar Keene, *m p* | *Marblehead* | West Hall, 30. |
| Morton, George Fisher, *bi* | *Cambridge* | Day Street. |
| Morton, Anna Lucy, *sc* | *Cambridge* | Day Street. |
| Nichols, Arvilla Florence, *a b*, | *Somerville* | 505 Broadway. |
| Perkins, Llewellyn Rood, *e* | *So. Woodstock, Vt.*, | Middle Hall, 7. |
| Philbrook, Etta Frances, *a b* | 85 *Ferry St., Everett.* | |
| Prentis, Thomas | 118 *Franklin St., Melrose.* | |
| Rand, Charles Henry, *e* | *Waltham* | West Hall, 14. |
| Rich, Edward Wellington, *a b*, | *West Acton* | East Hall, 15. |
| Richardson, Herbert Hay, *a b*, | *Stoneham* | East Hall, 17. |
| Robinson, George Nelson, *e* | *Winchester* | East Hall, 29. |
| Shaw, Ellen Eddy, *m p* | 14 *South St., Woburn.* | |
| Smith, Forster Hanson, *a b* | *Lowell* | West Hall, 32. |
| Smith, William Boulay, Jr., *e*, | *New Bedford* | East Hall, 22. |
| Sturtevant, Morton Adams, *a b*, | *Stoneham* | West Hall, 12. |
| Trow, Harris Cushman, *e* | *Kingston* | East Hall, 23. |
| Wallace, John Eugene, *e*, | *Waterloo, P. Q., Canada*, | East Hall, 2. |
| Watson, Clara Eva, *a b* | *Nashua, N. H.* | Metcalf Hall, 5. |
| White, Helen Ridler, *a b* | *Pawtucket, R. I.* | Metcalf Hall, 11. |
| Whitney, Arthur Bryant, *a b*, | *Milford* | Dean Hall, 9. |
| Wiley, Harry Farrington, *a b*, | *Peabody* | East Hall, 4. |
| Yeaton, Mary Frances, *a b* | 22 *Pond St., Stoneham.* | |

## Freshman Class.

| | | |
|---|---|---|
| Abbott, Stephen Edward, *e* | *Andover* | Middle Hall. |
| Allison, Fannie Gage, *a b* | 50 *Winn St., Woburn.* | |
| Andrews, Charles Masson, *sc*, | *Newtonville* | Δ Υ House. |
| Anthony, Madge Agnes, *a b* | *Adams* | Metcalf Hall, 6. |
| Atkinson, Martha Louise, *a b*, | *Laconia, N. H.* | Mr. Start's. |
| Barron, Elmer Walter, *a b* | *Charlestown* | West Hall, 18. |
| Bellows, Louise Jane, *a b* | *Spencer* | Mr. Start's. |
| Brown, Louis Raymond, *a b* | *Putnam, Conn.* | West Hall, 9. |
| Brooks, Joseph Bradford, *e* | *Portland, Me.* | East Hall, 11. |
| Burkett, Helen Loretta, *a b* | *Somerville* | 85 Mt. Vernon St. |
| Burrage, Elizabeth Theresa, *a b*, | *Somerville* | 20 Dartmouth St. |
| Burrage, John Otis, *e* | *Lowell* | East Hall, 25. |
| Burton, Charles Ernest, *e* | *Somerville* | 2 Homer Square. |
| Campbell, Daniel Raymond, *a b*, | *Bellows Falls, Vt.*, | West Hall, 15. |
| Chadwick, Henrie Francis, *e* | *Marion* | East Hall, 30. |
| Chase, Fred Marcellus, *ph* | *Newtonville* | 75 Columbus Ave., Somerville. |

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|---|---|---|
| Clark, Carrie Lois, *ph* | *West Brattleboro, Vt.*, | Metcalf Hall, 8. |
| Clark, Geo. Appleton, *a b* | *Somerville* | 49 Brastow Ave. |
| Clark, John Putnam, *a b* | *Jamaica Plain* | East Hall, 30. |
| Cole, Amy Lovett, *ph* | *Somerville* | 13 Lincoln St. |
| Conn, Wallace Thompson, *ch* | *Woburn* | East Hall, 25. |
| Cooper, Orville, *e* | *Picton, Canada.* | |
| Cushman, Clarence Alphonso, *ph*, | *Somerville* | Dean Hall, 11. |
| Cummings, Allen, *e* | *Woburn* | East Hall, 20. |
| Daniels, Ora George, *a b* | *Chelsea* | Dean Hall, 2. |
| Day, Mary Grace, *ph*, | *Hinsdale, N. H.*, | Metcalf Hall, 2. |
| Davis, Ethel, *ph* | *Yarmouthport* | Metcalf Hall, 9. |
| Emerson, Jason Draper, *a b* | 60 *Garland St.*, *Everett.* | |
| Fay, Ethel Lincoln, *a b* | *Tufts College* | Prof. Fay's. |
| Flaherty, William Henry, *e* | *Somerville* | 261 Washington St. |
| Gage, Lucy Helen, *a b* | 21 *Prescott St.*, *West Medford.* | |
| Gibson, Elbert Eugene *e* | *Cherry Valley, Can.* | East Hall, 16. |
| Harmon, Ethel Bryant, *a b* | *Tufts College* | Prof. Harmon's. |
| Hart, Lester Stanley, *a b* | *Adams* | East Hall, 33. |
| Haynes, Lewis Henry, *e* | *Newtonville* | East Hall, 24. |
| Hildreth, Guy Augustus, *a b*, | *Gardiner, Me.* | Dean Hall, 8. |
| Hill, Adella Richards, *a b* | *Somerville* | 22 Grand View Ave. |
| Hill, George Bond, *a b* | *Lowell* | Dean Hall, 5. |
| Hodges, Gilbert, Jr., *e* | *Medford* | West Hall, 23. |
| Holmes, Albert Bourne, *e* | *Sharon* | Δ Υ House. |
| Hunting, Ethel Parker, *a b* | *Somerville* | 47 Vinal Ave. |
| Ingalls, Mary Anna, *a b* | *Auburn, Me.* | Conwell Ave. |
| Ingalls, Nowell, *a b* | *Swampscott* | Dean Hall, 6. |
| Kendall, Ralph Talbot, *e* | *Portland, Me.* | Dean Hall, 1. |
| Kirkpatrick, Charles Darrow, | *Charlestown* | East Hall, 34. |
| Knapp, Ralph Hastings, *e* | *Boston* | East Hall, 3. |
| Lamb, Arthur Beckett, *a b* | *Attleboro* | East Hall, 19. |
| Lamb, Roland Manchester, *a b*, | *Attleboro* | East Hall, 19. |
| Lane, Elizabeth Caldwell, *a b*, | *West Medford* | 66 Brooks St. |
| Locke, William Lorenzo, *e* | *Watertown* | East Hall, 20. |
| Lovell, Ernest Mills, *e* | *Wayland.* | |
| Mason, Grace Agnes, *a b* | *West Somerville*, | 5 Mason Ave. |
| McDuffee, Edgar Jerome, *e* | *Bellows Falls, Vt.*, | West Hall, 14. |
| Metcalf, Herbert Lester, *e* | *Franklin* | East Hall, 9. |
| Noyes, Howard Wayland, *e* | *West Newbury* | Dean Hall, 14. |
| Parker, Laurence Houghton, *a b*, | *Newtonville* | Δ Υ House. |
| Pettengill, Clarence Albert, *ch*, | *Hudson* | Dean Hall, 11. |
| Phipps, Ross Elliot, *e* | *Watertown* | Δ Υ House. |
| Raby, John William, *e* | *So. Manchester, Conn.*, | East Hall, 10. |
| Restall, Charles Henry, *e* | 38 *Carmel St.*, *Chelsea.* | |
| Root, Francis Solomon, *e*, | *East Douglass*, | 120 Dartmouth St, Boston. |

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|---|---|---|
| Shipman, Margaret Maude, *ph*, | *Lewistown, Mont.* | 101 Talbot Ave. |
| Spaulding, Alice Howard, *a b*, | *Somerville* . . | 10 Putnam St. |
| Spaulding, Ernest Leonard, *a b*, | *Jaffrey, N. H.* . | 11 William St., Somerville. |
| Spooner, Harriet Maria, *a b* . | *Hinsdale, N. H.*, | Metcalf Hall, 2 |
| Tarbox, Carl Clifton, *a b* . . | *Biddeford, Me.* . | East Hall, 33. |
| Thomas, Irving B., *a b*. . . | *So. Manchester, Conn.*, | East Hall, 5. |
| Tousey, Ruth, *a b* . . . . | *Tufts College* . | 106 Professors Row. |
| Tuttle, Charles Percy, *ph* . | *Wakefield* . . | West Hall, 12. |
| Vincent, Shelley Davis, *a b* . | *Danbury, Conn.*, | West Hall, 12. |
| Wagner, Robert Edward, *e* . | *Provincetown* . | East Hall, 24. |
| Washburn, Frank De Witt, *a b*, | *Somerville* . . | East Hall, 5. |
| Waterman, Harry Oliver, *a b*, | *Jamaica Plain* . | East Hall, 28. |
| White, Glem William, *a b* . | *Ludlow, Vt.* . . | East Hall, 12. |
| White, Abbie Park, *a b* . . | *Taunton* . . . | Metcalf Hall, 7. |

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|---|---|---|
| Dearborn, Luther Gould, *a b* . | *Somerville* . . | East Hall, 16. |

### Special Students.

In the following list the Roman numeral indicates the year of attendance; the italicized department name is that of the student's major department; and the following subjects are those taken by the student for the current year. Abbreviations: Astron., Astronomy; Biol., Biology; Chem., Chemistry; Civ. Engin., Civil Engineering; Draw., Drawing; Elec., Electricity; Elec. Lab., Electrical Laboratory; El. Mech., Elements of Mechanism; Eng., English; Eng. Lit., English Literature; Geol., Geology; Germ., German; Hist., History; Math., Mathematics; Mech., Mechanics; Mech. Engin., Mechanical Engineering; Phil., Philosophy.

Allen, Charles Rollin . . . *Barre, Vt.* . . West Hall, 15.
  I. *Math.* An. Geom., Mach. Draw., El. Mech., Phys. 1, Chem. 1, Survey.
Atwood, Louise Russell . . *Medford* . . . 4 Garden St.
  IV. *Eng. Lit.* Eng. Lit. 6, French 4, Pol. Sci. 1, Music 4.
Avery, William Yale . . . *Providence, R. I.* Dean Hall, 14.
  I. *Math.* Alg., Sp. Geom., Trig., An. Geom., Survey., El. Mech., Phys. 1, Germ. 1, Rhet.
Bartlett, Alice Mae . *No. New Portland, Me.* Metcalf Hall, 15.
  II. *Math.* Eng. 1, French 1, 2, Hist. 1 Math. 3, 5, Physics 1, 6, Astron. 1.
Brown, Elizabeth C. . . . 167 *Elm St., W. Somerville.*
  I. *Eng. Lit.* Eng. Lit. 1, 2, Germ. 1, French 2, Hist. 1, Music 1.

Brown, Luther Ainsley . . . 67 *Broad St., Lynn.*
I. *Biol.* Germ. 3, Physics 1. Chem., 1, Biol. 2, 4.
Carvill, Lizzie Maud . . . *Somerville.* . . Metcalf Hall, 14.
II. *Germ.* Germ. 3, Comp., French 1, Physics 1, Chem. 1, Biol. 2, Music 1.
Clark, Irving Stockton . . . 14 *Greenwich St., Boston.*
III. *Elec. Engin.* Cal , French 4, Elec., Elec. Lab., St. Engin., Eng. Lit. 1 , Qual. Anal.
Coughlin, Frank William . . *Lowell.* . . .
I. *Math.* Alg., Sp. Geom., Trig., Mech. and Freeh. Draw., Carpent. and Turn., French 1, Rhet.
Kingsbury, Walter Warren . *West Medford* . East Hall, 27.
I. *Biol.* Eng. 1, Hist. 1, Math. 1, Physics 1, Biol. 1, Geol. 1.
Parke, Robert Hayward . . *Monson* . . . East Hall, 6.
III. *Elec. Engin.* Calc., Mach. Draw., Elec., Elec. Lab., St Engin., Qual. Anal., Eng. Lit. 1, French 3, Comp.
Thompson, Walter Frank . . *Plymouth* . . Dean Hall, 5.
I. (Buchtel Coll. 1894-96). *Pol. Science.* Eng. 2, Germ. 2, French 1, Hist. 5, Pol. Sci. 1., Phil. 2.
Thompson, Florence Emerson *Middleboro* . . Metcalf Hall, 7.
I. *Math.* Math. 1, Physics 1. Chem. 1, Biol. 1, Geol. 1, 2.
Turner, Harriette Alice . . *Tufts College* . Metcalf Hall.
II. *Eng. Lit.* Eng. Lit. 1, 2, 4 (a), Music 1.
Wallace, Edward Darling . . *Milford, N. H.* . Fairmount Ave., W. Somerville.
I. *Chem.* Alg., Chem. 2, 4, Carpent. and Turn., Mach. Draw.
Whittle, John Augustus . . *No. Weare, N. H.* Δ Υ House.
I. *Biol.* Eng. 1, French 1, Physics 1, Chem. 1, Biol. 2.
Webber, Abbot Reed . . . *Bedford* . . . 28 Professors Row.
I. *Math.* Eng. 1, Or. 1, Germ. 1, French 3, Hist. 1, Math. 1, Physics 1.
Worthen, Carrie Leeds . . *Melrose* . . . Metcalf Hall, 16.
II. *Germ.* Germ. 4, Comp., French 2, 3, Italian 1, Greek 7, Physics 1.

## DIVINITY SCHOOL.

### Senior Class.

Bartlett, Alden Eugene . . *Newtonville* . . Paige Hall, 30.
Benton, Herbert Elmon . . *Annisquam* . . Paige Hall, 13.
A. B., 1894.
Bissell, Flint Mandrin . . *Wellesley* . . . Paige Hall, 23.
Earle, Augusta Gertrude . . *Somerville* . . 8 Franklin St.
Eills, John . . . . . . . . *Lowell* . . . . Boston Ave.
Fortier, George Ferdinand . *Somerville* . . Paige Hall, 12.

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|---|---|---|
| Leavitt, Fenwick Lasselle | *Auburn, Me.* | Paige Hall, 19. |
| Macduff, Isabella Stirling | *Claremont, N. H.* | Boston Ave. |
| Powers, Mariette | *Rumford Falls, Me.*, | Metcalf Hall, 10. |
| Robbins, Clarence Guy | *Melrose* | Paige Hall, 31. |
| Smith, Nancy Wiley Paine | *Tufts College* | Boston Ave. |
| Taylor, Fred Allan<br>A. B., 1886. | *W. Somerville* | 38 Wallace St. |
| Thompson, George Linnæus | *Stafford, Conn.* | Paige Hall, 6. |
| Walker, Fred Storer<br>A. B., 1894. | *Portland, Me.* | Paige Hall, 7. |

### Middle Class.

| | | |
|---|---|---|
| Austin, Fannie Elmina | *Akron, O.* | 37 Sawyer Ave. |
| Ball, Dwight Ambrose | *Bellows Falls, Vt.*, | Paige Hall, 22. |
| Barney, Edward Mitchell | *Lynn* | Paige Hall, 18. |
| Eaton, Clarence Livingstone,<br>A. B., 1895. | *Worcester* | Paige Hall, 24. |
| Mathew, Tacy<br>A. B., Buchtel College, 1894. | *Wilmington, O*, | 37 Sawyer Ave. |
| Milton, Lucy Almira | *Waverley* | 37 Sawyer Ave. |
| Reifsnider, Edson | *Chicago, Ill.* | 37 Sawyer Ave. |
| Rouillard, Harry Enoch | *Hinsdale, N. H.*, | Paige Hall, 1. |
| Taylor, William John<br>B. S., Univ. of Minnesota, 1895. | *Minneapolis, Minn.*, | Paige Hall, 8. |

### Junior Class.

| | | |
|---|---|---|
| Cheever, Ralph Holbrook<br>A. B., 1896. | *Portsmouth, N. H.*, | Paige Hall, 36. |
| Marvin, Reginold Kent<br>A. B., 1896. | *Roxbury* | Paige Hall, 3. |
| Patterson, Charles Franklin | *Medford* | Paige Hall, 25. |
| Petty, Charles Ellsworth<br>A. B., Buchtel College, 1896. | *Akron, O.* | Paige Hall. |

### Sub-Junior Class.

| | | |
|---|---|---|
| Bellows, Walter Edward | *Spencer* | Paige Hall, 17. |
| Lewis, Lester Lothrop | *Providence, R. I.*, | Paige Hall, 5. |
| Pennoyer, Charles Henry | *No. Hatley, Quebec*, | Paige Hall, 29. |
| Spear, Stanley Gates | *Hartland, Vt.* | Paige Hall, 32. |

### Special Students.

| | | |
|---|---|---|
| Emerson, Mabel Irene | 13 *Sherman Street, Roxbury.* | |
| Goldthwaite, Elizabeth Holt, | *Danvers.* | |
| Kimball, Frances Augusta | *Poland, Me.* | Boston Ave. |
| Powell, Hannah Jewett, | *Waterville, Me.*, | 424 Medford St., Somerville. |

## MEDICAL SCHOOL.

### Senior Class.

| | |
|---|---|
| Avedisian, Hagop der | *Avon.* |
| Bailey, Ernest Harry | *Wellington* |
| Bartlett, Robert Lander, D. M. D. | *Lynn.* |
| Birmingham, Louis Howland | *Malden.* |
| Bourn, Cora E. | *Providence, R. I.* |
| Bowman, Anthony William | *Charlestown.* |
| Brooks, Simon Pomeroy, A. B. | *Boston.* |
| Burgess, Charles James | *Lawrence.* |
| Cleary, James, D. D. S. | *Leominster.* |
| Cushing, Charles Baldwin | *Cohasset.* |
| Eldridge, Jerrie A., M. D. | *Wareham.* |
| Fitzgerald, William Henry, M. D. | *Middletown, Conn.* |
| Ford, Michael Angelo | *Rockland.* |
| Hart, Francis Joseph | *Boston.* |
| Hayden, Lewis Brooks | *Augusta, Me.* |
| Hearn, Thomas Henry | *Boston.* |
| Heaton, Thomas Henry | *Cambridge.* |
| Hickey, Lawrence Joseph | *Roxbury.* |
| Homer, John, M. D. | *Newburyport.* |
| Hopkins, Bertrand Hiram | *West Medford.* |
| Howland, Edgar Joseph | *Somerville.* |
| Huck, Marie Estelle, M. D. | *Austin, Texas.* |
| Jelalian, Hairabed S. | *Dardanelles, Turkey.* |
| Johnson, Henry Peyton | *Richmond, Va.* |
| Mackintosh, Elizabeth Ellard | *Medway.* |
| Mackintosh, Ernest Robert | *Brookline.* |
| Macy, Fred Stevens | *Malden.* |
| McGee, Fannie Maria | *Waban.* |
| McLean, William Corbett | *Everett.* |
| McNeish, Alexander | *Everett.* |
| Merrill, Stephen Douglass | *Boston.* |
| Morse, Frederick Otis | *East Boston.* |
| Murphy, Jeremiah Edward | *Somerville.* |
| Orr, Samuel Sanford | *Cambridge.* |
| Patrick, Thomas W., M. D. | *Boston.* |
| Peabody, Sophia Reed | *Lawrence.* |
| Peck, Luke Baker | *Brookline.* |
| Place, Ralph Waldo | *Boston.* |
| Proctor, John Donald | *Keene, N. H.* |
| Pigott, Thomas Edmond | *Winthrop.* |
| Redmond, Thomas Henry | *Lawrence.* |
| Riley, Elizabeth Angela | *Chelsea.* |

| | |
|---|---|
| Russell, Frederick James | *New Bedford.* |
| Sexton, James Henry, Jr. | *Malden.* |
| Shaw, Thomas Wignall | *Somerville.* |
| Shershefsky, Cecilia | *Portland, Me.* |
| Shisler, William Henry | *Fort Erie, Ont.* |
| Simpson, Joseph | *Hartford, Conn.* |
| Snow, Henry Curtis Butler | *Buzzard's Bay.* |
| Stevens, Juliet Nora | *Chicago, Ill.* |
| Story, Helen Louise | *Laconia, N. H.* |
| Sullivan, Francis Augustus | *Cambridge.* |
| Walker, Alba Gustavus | *Boston.* |
| Young, James Alexander | *Boston.* |

## Middle Class.

| | |
|---|---|
| Ayers, Seabury Rogers | *Roxbury.* |
| Baker, Lewis Forrester | *Wollaston.* |
| Beal, Herman Alaric | *Mattapan.* |
| Berg, Tekla | *Lynn.* |
| Bertrand, Alexis Evariste | *Lowell.* |
| Caisse, George Emile | *Lowell.* |
| Corbett, Francis Alfred | *Newport, R. I.* |
| Cote, Honore Joseph | *Boston.* |
| Crittenden, Harrison Murray | *Haverhill.* |
| Dalton, Henry | *Cambridge.* |
| Davis, Winnifred Puffer | *Charlestown.* |
| Donaldson, Olive Kate | *Winthrop.* |
| Dow, David Crocket | *Cambridgeport.* |
| Fitzgerald, Charles J. | *Middletown, Conn.* |
| Flynn, John Leo | *Cambridge.* |
| Foster, Harry Ruffie | *Chelsea.* |
| Garrett, Frank Steele | *New York City, N. Y.* |
| Gilbert, Frank Leslie | *Boston.* |
| Gillan, William Frederick Aloysius | *Pawtucket, R. I.* |
| von Groll, Maximilian Charles, Ph. G. | *Roxbury.* |
| Hall, Walter Davis | *Medford.* |
| Hamblen, Edward Everett | *Bedford.* |
| Harris, Sylvia Fowler | *Berkeley, Cal.* |
| Herrick, Florence Adelaide | *Stoneham.* |
| Hinckley, James William | *Boston.* |
| Holland, William Timothy | *Winchester.* |
| Holmes, Luke Marvin | *New Haven, Conn.* |
| Ives, Henry | *Boston.* |
| Joslin, Edward Herbert | *Keene, N. H.* |
| Judkins, Anna Gertrude | *Boston.* |

| | |
|---|---|
| Kelley, Joseph Henry Hart | *Charlestown.* |
| Kingsbury, Albert Edward, A. M. | *Boston.* |
| Ladd, Fred Eugene | *Brockton.* |
| Lane, Frank Ellsworth | *Cambridgeport.* |
| Ledwell, Richard John | *Boston.* |
| Libby, Mary Gordon | *Boston.* |
| Lilly, Thomas Eugene | *Lawrence.* |
| Lockwood, Charles Edwin | *Binghamton, N. Y.* |
| Lord, Herbert | *Berwick, Me.* |
| Martin, John B. | *Charlestown.* |
| Mayers, John Edward | *South Boston* |
| Meek, Edith R. E. | *Fall River.* |
| Petluck, Joseph | *Boston.* |
| Reid, Eustace Palmer | *Boston* |
| Rich, Herbert Lowell, Ph. B. | *Newton.* |
| Ryan, George Whitehouse | *Dorchester.* |
| Santosuosso, Joseph | *Boston.* |
| Schofield, Otho Lester | *Charles River Village.* |
| Siske, Harry Edward | *Palmer.* |
| Slack, Francis Hervey | *North Abington.* |
| Smith, Alfred Charles | *Malden.* |
| Stevens, Ruey Bartlett | *Roslindale.* |
| Stodder, Charles William | *Roxbury.* |
| Street, Lionel A. B. | *Boston.* |
| Stroud, Charles Crawford, A. B. | *Tufts College.* |
| Thompson, Peter Hunter | *Boston.* |
| Tobey, Nathan Paul | *Cambridgeport.* |
| Truworthy, Harry Leslie | *Newport, Me.* |
| Webber, Sarah Southworth | *West Newton.* |
| Wellington, Mary E. | *New York City.* |
| Wilson, Almira Janette | *Boston.* |
| Wilson, Joseph Aloysius | *Boston.* |
| Wood, Mary Anna | *Pittsfield.* |
| Woodhead, Raynor | *Central Falls, R. I.* |
| Young, Emma Elizabeth | *Acton, Me.* |

## Freshmen Class.

| | |
|---|---|
| Black, George Luke | *Lawrence.* |
| Bowens, Bruce Tucker | *Wilmington, Del.* |
| Boynton, Henry Bullard | *West Townsend.* |
| Brown, Walter Haran | *Palmer.* |
| Burnham, Joseph Forrest | *Lawrence.* |
| Clay, Arthur Thomas Selman | *Halifax, N. S.* |
| Coriat, Isador Harry | *Roxbury.* |

| | |
|---|---|
| Cushing, Adelaide Olga | *Boston.* |
| Doucett. Frederick Luke | *Stoneham.* |
| Dunbar, Frank Herbert | *Mansfield.* |
| Fennell, William Hobin | *Lawrence.* |
| Forster, Robert William | *Lawrence.* |
| Gould, John Hogg | *Melrose.* |
| Gray, Alice Maud | *Dorchester.* |
| Greene, Eva Keith | *Malden.* |
| Hall, Rufus Hacker, A. B. | *Revere.* |
| Hamblen, Howard | *Somerville.* |
| Hannaford, Charles William | *Portsmouth, N. H.* |
| Hara, Edward Benedict | *Allston.* |
| Howe, Winfred Lewis | *Cambridgeport.* |
| Hughes, George F., Jr. | *West Somerville* |
| Jenkyns, Ebenezer Hammerton, Ph. D. | *Boston.* |
| Journeay, Warren William | *Boston.* |
| King, Arthur Wight | *Hyde Park.* |
| Larkin, Joseph Francis | *Woburn.* |
| Lay, Walter Siddons | *Whitman.* |
| Lewis, Marion | *Jamaica Plain.* |
| Lindquist, Carl August | *Brockton* |
| Lowell, Hannah | *Auburn, Me.* |
| Lowney, John Joseph | *Fall River.* |
| Lynds, Eleanor Belle | *Sackville, N. B.* |
| Mahern, John Joseph | *Woburn.* |
| Maney, John Joseph | *Methuen.* |
| McLeod, Scott | *Boston.* |
| McNamara, John James | *Brockton.* |
| Miles, Mary Ina | *Burlington, Vt.* |
| Milot, Wilfrid F. | *Taunton.* |
| Norton, George E. | *Cambridgeport.* |
| Pastor, Leonard Joshua | *Quincy.* |
| Patch, Jennie Edith | *Manchester, N. H.* |
| Pollard, Ella May | *Ashland, N. H.* |
| Price, Oscar Jay | *Milton.* |
| Pease, Charles Valentine | *Dorchester.* |
| Randall, W. J. | *Chelsea.* |
| Reilly, Lincoln Leonard | *Somerville.* |
| Rosa, Henry Anthony | *New Bedford.* |
| Saville, George Kittridge | *Boston.* |
| Smeltzer, James Finlay | *Boston.* |
| Stewartson, Charlotte Dodd | *Manchester, N. H.* |
| Swan, Leon Garland | *Lawrence.* |
| Trower, Arthur Henry | *South Boston.* |

| | |
|---|---|
| Unwin, George Thomas | *Somerville.* |
| Weil, Edna Helen | *Boston.* |
| Williams, Charles Edward | *Charlestown.* |
| Woodworth, John Dawson Roswell | *Jamaica Plain.* |
| Yarashefsky, Mark Henry | *Woonsocket, R. I* |

## Special Students.

| | |
|---|---|
| Harding, Walter Allen | *Skowhegan, Me.* |
| Park, Osman Franklin | *Roslindale.* |

## Resident Graduates.

| | |
|---|---|
| Hughes, Laura A. C., M. D. | *Boston.* |
| Patch, Annie S. K., M. D. | *Boston.* |
| Patterson, William F., M. D. | *East Somerville.* |

# Summary.

CORPS OF INSTRUCTION:

| | | |
|---|---|---|
| Emeritus | | 2 |
| Professors | 36 | |
| Assistant Professors | 4 | |
| Instructors | 21 | |
| Lecturers | 9 | |
| Assistants | 15 | |
| Total engaged in work of instruction | 85 | |

## Students.

COLLEGE OF LETTERS:

| | | |
|---|---|---|
| Graduate | 6 | |
| Senior | 35 | |
| Junior | 53 | |
| Sophomore | 63 | |
| Freshman | 76 | |
| Special | 18 | |
| | | 251 |

DIVINITY SCHOOL:

| | | |
|---|---|---|
| Senior | 14 | |
| Middle | 9 | |
| Junior | 4 | |
| Sub-junior | 4 | |
| Special | 4 | |
| | | 35 |

MEDICAL SCHOOL:

| | | |
|---|---|---|
| Senior | 54 | |
| Middle | 65 | |
| Freshman | 56 | |
| Special | 2 | |
| Graduates | 3 | |
| | | 180 |
| Bromfield-Pearson School | | 6 |
| TOTAL NUMBER OF STUDENTS | | 472 |

# THE COLLEGE OF LETTERS

# Faculty of the College of Letters.

ELMER H. CAPEN, D. D., PRESIDENT.
*Professor of Moral Philosophy and Political Economy.*
JOHN P. MARSHALL, A. M., DEAN.
*Pearson Professor of Geology and Mineralogy.*
JEROME SCHNEIDER, PH. D.
*Professor of the Greek Language and Literature.*
HEMAN A. DEARBORN, A. M.
*Professor of the Latin Language and Literature.*
WILLIAM R. SHIPMAN, D. D.
*Professor of Rhetoric, Logic, and Metaphysics.*
BENJAMIN G. BROWN, A. M.
*Walker Professor of Mathematics.*
CHARLES D. BRAY, C. E., A. M.
*Professor of Civil and Mechanical Engineering.*
CHARLES E. FAY, A. M.
*Wade Professor of Modern Languages.*
AMOS E. DOLBEAR, M. E., PH. D.
*Professor of Physics and Astronomy.*
WILLIAM L. HOOPER, A. M.
*Professor of Electrical Engineering.*
DAVID L. MAULSBY, A. M.
*Professor of English Literature and Oratory.*
J. STERLING KINGSLEY, S. D.
*Professor of Biology.*
GARDNER C. ANTHONY, A. M.
*Professor of Technical Drawing.*
ARTHUR MICHAEL, A. M., PH. D.
*Professor of Chemistry.*
LEO R. LEWIS, A. M.
*Professor of the History and Theory of Music.*
FRANK W. DURKEE, A. M.
*Assistant Professor of Chemistry.*
CHARLES ST. CLAIR WADE, A. M.
*Assistant Professor of Greek.*
FRANK E. SANBORN, S. B.
*Instructor in Mechanical Engineering.*
EDWIN A. START, A. M.
*Instructor in History.*

FRANK T. DANIELS, A. M. B., SECRETARY.
*Instructor in Civil Engineering.*
THOMAS WHITTEMORE, A. B.
*Instructor in English.*
JOHN E. BUCHER, A. C., PH. D.
*Instructor in Organic Chemistry.*
HARRY GRAY CHASE, B. E. E.
*Instructor in Electrical Engineering.*
FRANK G. WREN, A. B.
*Walker Special Instructor in Mathematics.*
CHARLES C. STROUD, A. B.
*Instructor in Physical Training.*
SAMUEL C. EARLE, A. M.
*Instructor in French, and Assistant in English Literature.*
ROBERT N. HARTMAN, A. B., PH. D.
*Instructor in Quantitative Analysis.*

## STANDING COMMITTEES OF THE FACULTY.

ADMISSIONS: The examiners and the Secretary of the Faculty.

PROMOTIONS: Professor Shipman, *Chairman ;* Professors Hooper, Brown, Fay, and Assistant Professor Durkee

SCHOLARSHIPS AND AIDS: President Capen, *Chairman ;* Professors Shipman and Dearborn.

PROGRAM: Mr. Start, *Chairman ;* Professors Hooper, Dearborn, Brown, and Lewis.

CATALOGUE: Mr. Start, *Chairman ;* Professors Hooper and Maulsby.

MEMBERS ON THE PART OF THE FACULTY OF THE ADVISORY COMMITTEE ON ATHLETICS: Professor Knight (from the Divinity School), *Chairman ;* Assistant Professor Durkee, and Mr. Daniels.

GLEE CLUB: Professor Lewis, *Chairman ;* Professor Knight (from the Divinity School), and Mr. Daniels.

FRESHMAN PLANS OF STUDY: Professor Dearborn, *Chairman* Professors Shipman, Brown, Lewis, and Assistant Professor Wade.

DEPARTMENT OF ENGINEERING : Professor Brown, *Chairman* President Capen, Professors Hooper and Bray, and Assistant Professor Durkee.

BOOKS AND SUPPLIES: Professor Lewis, *Chairman ;* Assistant Professor Durkee, and Mr. Wren.

# Requirements for Admission.*

## SUBJECTS OF EXAMINATION.

The subjects in which candidates for admission to the Freshman Class may be examined are given below. The requirements for candidates for the several courses will be found in the schedule of examination groups on pages 45, 46, and 47.

**Latin.**

1. LATIN GRAMMAR. — Allen and Greenough's or Harkness's Grammar, including Prosody.
2. CÆSAR. — Gallic War, Books I–IV.
3. CICERO. — Orations against Catiline, for Archias, Marcellus, and the Manilian Law.
4. VIRGIL. — Æneid, Books I–VI.
5. OVID. — Metamorphoses, 2,500 lines.
6. LATIN COMPOSITION. — Collar's Latin Composition, and translation into Latin of a connected passage of English prose, not taken from the text-book, but involving only familiar words and idioms.

ALTERNATIVES. — While the foregoing requirements are preferred, equivalents will be accepted; also in place of the last two orations of Cicero and requirement 5, an examination may be taken, if desired, on average passages from the above-named works, not included in the portions prescribed.

**Greek.**

7. GREEK GRAMMAR. — Hadley-Allen's or Goodwin's Greek Grammar, including Prosody.
8. XENOPHON. — Anabasis, four books.
9. HOMER. — Iliad, three books.
10. GREEK COMPOSITION. — The translation into Greek of a connected passage of English prose. Woodruff's Greek Composition is recommended as a drill-book.

ALTERNATIVES. — In place of requirements 8 and 9, translation at sight of easy passages of the Anabasis and average passages from the Iliad (with a vocabulary of the less-used words).

11. ELEMENTARY GERMAN.

**German.** The Elementary Examination will be adapted to the proficiency of those who have studied German in a systematic course of five periods a week for *one* year. It will consist of two parts (which, however, cannot be taken separately): — **German.**

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* See note on page 48.

(*a*) The translation at sight of a passage of easy prose containing no rare words.

The passages set for translation will be suited to candidates who have read not less than one hundred and fifty duodecimo pages of simple German, chiefly narrative prose; this amount includes sight reading done in class. — It is important that all translation be done into clear and idiomatic English.

(*b*) The translation into German of simple English sentences, to test the candidate's familiarity with elementary grammar.

Elementary grammar is understood to include the conjugation of the weak and the more usual strong verbs; the declension of articles, adjectives, pronouns, and such nouns as are readily classified; the commoner prepositions; the simpler uses of modal auxiliaries; the elements of syntax and word-order. — Proficiency may also be tested by direct questioning.

Practice in pronunciation by reading aloud as much as possible from the texts used in the class is recommended; also the writing of German from dictation.

### 12. INTERMEDIATE GERMAN.

The Intermediate Examination will be adapted to the proficiency of those who have studied German in a systematic course of at least four periods a week for *two* years. It will consist of two parts (which may be taken separately): —

(*a*) The translation at sight of ordinary German.

The remarks under 13(*a*) apply, merely substituting "*two hundred*" for "*six hundred*" in that program.

(*b*) The translation into German of a passage of simple English prose.

A less extensive knowledge of syntax than for 13(*b*) will be presupposed in the selection of the matter for translation.

### 13. ADVANCED GERMAN.

The Advanced Examination will be adapted to the proficiency of those who have studied German in a systematic course of at least four periods a week for *three* years. It will consist of two parts (which may be taken separately): —

(*a*) The translation at sight of standard German.

In preparation for this examination candidates will be expected to have read, in addition to the amount specified under "Elementary (*a*)," at least six hundred duodecimo pages of classical and contemporary prose and verse, to be selected from such works as the following: Riehl, *Kulturgeschichtliche Novellen;* Freytag, *Bilder aus der* *deutschen Vergangenheit*, especially *Aus dem Mittelalter* and *Aus dem Jahrhundert des groszen Krieges:* Kohlrausch, *Das Jahr* 1813; Schiller, *Der dreiszigjährige Krieg*, *Wilhelm Tell*, *Maria Stuart*, *Die Jungfrau von Orleans;* Goethe, *Hermann und Dorothea*, *Egmont*, *Iphigenie;* Lessing, *Minna von Barnhelm*. At least one half of the amount read should be nineteenth century prose.

(*b*) The translation into German of a passage of easy English prose.

In preparation for this examination candidates will be expected to have acquired a thorough knowledge of accidence, the elements of word-formation, and the principal uses of prepositions and conjunctions; the essentials of syntax, especially the uses of modal auxiliaries and the subjunctive and infinitive modes. Proficiency may also be tested by direct questioning.

It is recommended that the candidate acquire the ability to follow a recitation conducted in German and to answer in that language questions asked by the instructor.

**French.** 14. ELEMENTARY FRENCH.

The Elementary Examination will be adapted to the proficiency of those who have studied French in a systematic course of five periods a week for *one* year. It will consist of two parts (which, however, cannot be taken separately): —

(*a*) The translation at sight of easy prose.

The passages set for translation will be suited to candidates who have read not less than two hundred duodecimo pages from the works of at least three different authors; this amount includes sight reading done in class. Not more than half the reading should be from works of fiction. It is important that all translation be done into clear and idiomatic English.

(*b*) The translation into French of English sentences, or a short connected passage, to test the candidate's familiarity with elementary grammar.

Elementary grammar is understood to include the conjugation of regular and the more usual irregular verbs, such as *aller*, *tenir*, *pouvoir*, *savoir*, *voir*, *vouloir*, *dire*, *faire*, and those belonging to the classes represented by *dormir*, *ouvrir*, *connaître*, *conduire*, *craindre;* the forms and positions of the personal pronouns; the uses of other pronouns and of possessive, demonstrative, and interrogative adjectives; the inflection of nouns and adjectives for gender and number, except rare cases; the commoner uses of the article; and the partitive constructions. — Proficiency may also be tested by direct questioning.

Pronunciation should be carefully taught, and the pupil should be accustomed to hear and understand the spoken language. The writing of French from dictation is also recommended.

**French.**

15. INTERMEDIATE FRENCH.

The Intermediate Examination will be adapted to the proficiency of those who have studied French in a systematic course of at least four periods a week for *two* years. It will consist of two parts (which may be taken separately): —

(*a*) The translation at sight of ordinary French.

The remarks under 16 (*a*) apply, merely substituting "*three hundred*" for "*eight hundred.*"

(*b*) The translation into French of a passage of easy English.

A less extended knowledge of syntax than for 16 (*b*) will be presupposed in the selection of matter for translation.

16. ADVANCED FRENCH.

The Advanced Examination will be adapted to the proficiency of those who have studied French in a systematic course of at least four periods a week for *three* years. It will consist of two parts (which may be taken separately): —

(*a*) The translation at sight of standard French.

The passages set for translation will be suited to candidates who have read, in addition to the amount specified under "Elementary (*a*)," not less than eight hundred duodecimo pages of classical and contemporary prose and verse from the writings of at least five standard authors.

(*b*) The translation into French of a passage of English prose.

In preparation for this examination candidates will be expected to have acquired a thorough knowledge of accidence and a familiarity with the essentials of French syntax, especially the uses of modes and tenses, and also with the commoner idiomatic phrases. — Proficiency may also be tested by direct questioning.

Careful attention should be paid to pronunciation and to the use of spoken French, that the candidate may at least acquire the ability to follow a recitation conducted in the language and to answer questions asked by the instructor.

**Mathematics.**

17. ARITHMETIC, including the Metric System.

18. ALGEBRA, through quadratic equations, including radical quantities, together with proportion, arithmetical and geometrical progression, and the binomial theorem for positive integral exponents.

19. PLANE GEOMETRY.

20. SOLID GEOMETRY.

**History.**

21. (*a*) ANCIENT HISTORY (Greece and Rome), or
(*b*) MEDIÆVAL AND MODERN EUROPEAN HISTORY, or
(*c*) THE HISTORY OF ENGLAND AND THE UNITED STATES.

The following text-books are recommended and will indicate the amount of preparation required: (*a*) and (*b*), Sheldon's Outlines of

**History.** General History; (*a*), for Ancient History, Oman's or Smith's (smaller) Greece, Allen's Roman People; for Mediæval and Modern Europe, Myers's General History; for the History of England and the United States, Montgomery's Leading Facts in English History, Fiske's History of the United States for Schools, Johnston's History of the United States for Schools. The use of such manuals as Wilder's English History (Laboratory method) and Bacheler's American History (Library method) is helpful.

**English.**

### 22. ENGLISH.

*Note.*— No candidate will be accepted in English whose work is notably defective in point of spelling, punctuation, syntax, idiom, or division into paragraphs.

1. *Reading and Practice.*— A certain number of books will be set for reading. The candidate will be required to present evidence of a general knowledge of the subject-matter, and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics, to be chosen by the candidate from a considerable number — perhaps ten or fifteen — set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may be allowed to present an exercise book, properly certified by his instructor, containing compositions or other written work done in connection with the reading of the books.

The books set for this part of the examination will be: —

1897.— Shakespeare's As You Like It; Defoe's History of the Plague in London; Irving's Tales of a Traveller; Hawthorne's Twice Told Tales; Longfellow's Evangeline; George Eliot's Silas Marner.

1898.— Milton's Paradise Lost, Books I and II; Pope's Iliad, Books I and XXII; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables.

1899. — Dryden's Palamon and Arcite; Pope's Iliad, Books I, VI, XXII, and XXIV; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; De Quincey's The Flight of a Tartar Tribe; Cooper's The Last of the Mohicans; Lowell's The Vision of Sir Launfal; Hawthorne's The House of the Seven Gables.

2. *Study and Practice.*— This part of the examination presupposes the more careful study of each of the works named below. The examination will be upon subject-matter, form, and structure; and will also test the candidate's ability to express his knowledge with clear-

ness and accuracy. The books set for this part of the examination will be:— **English.**

1897.—Shakespeare's The Merchant of Venice; Burke's Speech on Conciliation with America; Scott's Marmion; Macaulay's Life of Samuel Johnson.

1898.—Shakespeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Tennyson's The Princess.

1899.—Shakespeare's Macbeth; Milton's Paradise Lost, Books I and II; Burke's Speech on Conciliation with America; Carlyle's Essay on Burns.

**Sciences.**

23. PHYSICS.—The requirement in Physics is an acquaintance with the subject as treated in Avery's or Gage's work, or any other of similar grade, with special attention to Mechanics and ability to work out numerically problems in that department.

24. CHEMISTRY.—Remsen's Briefer Course or its equivalent.

25. NATURAL HISTORY.—Any two of the four subjects: Botany, Zoölogy, Physiology, or Geology. The amount required in each is essentially covered by any good text-book for secondary schools. In Botany and Zoölogy, laboratory work is of more importance than the study of the text-book. As illustrating the character of preparation required, the following books may be mentioned: In Botany, Bessey's Briefer Course, Campbell's Structural and Systematic Botany, or Spaulding's Introduction to Botany; in Zoölogy, Colton's Practical Zoölogy; in Physiology, Huxley's Elementary Physiology, Jenkins's Advanced Lessons in Human Physiology, or Martin's Human Body, briefer course; in Geology, Dana's Geological Story Briefly Told, or Leconte's Elements of Geology.

26. FREEHAND DRAWING.—Outline drawing from simple casts, geometric models, and groups of models.

## EXAMINATION GROUPS.

**For courses leading to degree of A. B.**

Candidates for courses leading to the degree of Bachelor of Arts must take their examination in the subjects comprised in one of the two following groups:—

### Group I.

LATIN, 1, 2, 3, 4, 5, and 6.
GREEK, 7, 8, 9, and 10.
GERMAN, 11, or FRENCH, 14.
MATHEMATICS, 17, 18, and 19.
HISTORY, 21.
ENGLISH, 22.

**For courses leading to degree of A. B.**

### Group II.

LATIN, MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 13. } or { FRENCH, 14 and 16.
FRENCH, 14. } or { GERMAN, 11.

This group differs from Group I in the substitution for Greek of advanced work in Modern Languages.

**For courses leading to degree of Ph. B.**

Candidates for courses leading to the degree of Bachelor of Philosophy must take their examination in the subjects comprised in one of the two following groups : —

### Group III.

LATIN, MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 12. } or { FRENCH, 14 and 15.
FRENCH, 14. } or { GERMAN, 11.

### Group IV.

MATHEMATICS, HISTORY, and ENGLISH, as in I.
GERMAN, 11 and 13. } or { FRENCH, 14 and 16. } or { GERMAN, 11 and 12.
FRENCH, 14. } or { GERMAN, 11. } or { FRENCH, 14 and 15.

PHYSICS, 23.
CHEMISTRY, 24.
NATURAL HISTORY, 25.
} To be accepted, these subjects must represent an aggregate of at least three years of study, with an average of four periods a week.

[LATIN, 1, 2, 3, and a part of 4, or their equivalent, will be accepted in place of one intermediate Modern Language, that is, GERMAN, 11 and 12, or FRENCH, 14 and 15.]

Groups III and IV are offered to meet the needs of graduates of the English courses, so called, in the best high schools, who may desire to enter upon college study looking toward a degree. It will be seen, by reference to the appropriate numbers in the preceding subject list, that Group III accepts a smaller amount of preparation in the modern languages than that required for entrance through Group II to courses leading to the degree of Bachelor of Arts. Group IV allows the substitution for Latin of an increase over the requirement of Group

III in modern languages, and of elementary work in three scientific subjects.

### Group V.

For couses leading to degree of S. B.

MATHEMATICS, HISTORY, and ENGLISH, as in I.
LATIN, 1, 2, and in 4, four books of the Æneid; or
GERMAN, 11 and 12; or
FRENCH, 14 and 15.
SCIENCE: One year's work, with a weekly average of at least three periods of class work, in one of the following: Chemistry, Physics, Physiology, Botany, Zoölogy, Geology, Drawing.

This examination group admits to the courses leading to the degree of Bachelor of Science: the General Course in Science, the Special Courses in Biology and Chemistry, and the Medical Preparatory Course. These courses are intended primarily for graduates of English high schools who have a special object before them lying along the lines laid out for these courses.

For Candidates for Engineering Courses.

Candidates for the courses leading to the degree of Bachelor of Science in Engineering will be required to take the subjects comprised in

### Group VI.

MATHEMATICS, 17, 18, 19, and 20.
GERMAN, 11, or French, 14.
ENGLISH, 22.
DRAWING, 26.

## GENERAL INFORMATION RELATING TO EXAMINATIONS.

The regular examination for admission will begin on the day after Commencement, and continue through the two following days. A second examination will be held on the Tuesday, Wednesday, and Thursday preceding the beginning of the college year. The examination will begin at 9 o'clock A. M., on each of these days. The assignment of examination subjects appears in the Calendar, pages 4 and 5.

At the regular examination in June, those who will be candidates for admission to the Freshman class one year later may present themselves for a preliminary examination, if certified by their teachers to be prepared in not less than half of the number of subjects required for admission to the course proposed, and may receive certificates if they pass in not less than three quarters of the number of subjects presented. English may be presented at the final examination only.

For admission to advanced standing, an examination must be well sustained both in the preparatory studies and in the studies in which the candidate desires credit for advanced work.

The certificates of teachers in schools of good standing, whose courses have been approved, are accepted in lieu of an examination. To be received, the certificate (blank forms of which will be sent on application to the Registrar of the College) must specify the subjects that have been pursued and to what extent, or what are offered as equivalents in case the preparatory course has differed from that presupposed in the foregoing requisitions, and must express the opinion of the teacher that the candidate is well prepared to enter upon a college course. Certificates should be in the hands of the Registrar at least four weeks before the beginning of the college year. Candidates so admitted will be regarded as upon a special probation, which may be terminated at any time if their preparation is found to be inadequate. Every school sending certificates is required to file with the Secretary of the Faculty a statement of its course of instruction and teaching force. Certificates from schools not complying with this requirement will not be accepted.

A fee of five dollars must be paid in advance by every candidate who is examined at any other place than the College.

[NOTE.—A special circular will soon be prepared setting forth in detail a new arrangement of requirements for admission. This circular can be obtained by application to the Librarian of the College.]

# Requirements for Degrees.

Students may enter upon their work in the courses in Liberal Arts as candidates for the degree of Bachelor of Arts, or for that of Bachelor of Philosophy, or for that of Bachelor of Science, according to the examination group upon which they are admitted to the college. In any case the ground of promotion and of graduation is the intellectual attainment of the individual student, not a fixed requirement of a certain number of years of study. Candidates for the degree of Bachelor of Philosophy will be necessarily somewhat more limited in their selection of subjects because of the nature of their preparation, while the courses leading to the degree of Bachelor of Science consist mainly of prescribed work on special lines. Those who have fulfilled the requirements for the degree of Bachelor of Philosophy may obtain the degree of Bachelor of Arts on the satisfactory completion of six term hours of additional work in approved elective subjects.

The plan of study offered to the student is at once liberal, controlled, and elastic. It combines the requirements of the general culture, which is the prime object of the undergraduate college course, with an opportunity for the development of the individual on the lines to which he is especially adapted, and for preparation for university and professional study. Throughout the courses students have large liberty in choosing their work, but they are brought into personal advisory relations with the major instructors, who arrange and guide a considerable portion of their work after its general direction has been determined. A reasonable amount of guided specialization is thus provided for, while the personal relations of the student with the major instructor form a valuable adjunct to the routine work of instruction in developing the interest and the character of the students. All work actually accomplished by the student in regular standing counts toward the attainment of the degree. The period within which the degree may be attained depends upon the industry and ability of the individual student.

## SYNOPSIS OF THE REQUIREMENTS.

### For A. B. and Ph. B.

[NOTE. — Each department offers a series of subjects for study. The unit for indicating the requirements is the *term hour*, which represents the number of program hours per week required in each subject, expressed for a period of one term. Thus a subject calling for three hours a week, for one term, represents a requirement of three term hours; if it calls for three hours a week for one year, or two terms, the requirement in that subject is six term hours.]

(1) The requirement for the degree of Bachelor of Arts or Bachelor of Philosophy is the satisfactory completion of subjects aggregating one hundred and twenty-eight term hours.

(2) The program of prescribed studies is as follows: —

| | TERM HOURS. |
|---|---|
| LANGUAGES (Latin, Greek, French, German; each student to take *three*) . . . . . . . . . . | 18 |
| ENGLISH (Rhetoric, Composition, Themes, Oratory) | 12 |
| MATHEMATICS . . . . . . . . . . . . . . . . | 6 |
| SCIENCE (Physics, Chemistry, Biology; each student to take *one*) . . . . . . . . . . . . . . . | 6 |
| MENTAL AND MORAL SCIENCES (Philosophy, History, Political Science; each student to take *one full or two half* subjects) . . . . . . . | 6 |
| PHYSICAL TRAINING . . . . . . . . . . . | 2 |
| A total of . . . . . . . . . . . . . . . . | 50 |

The requirements are by groups, not by special subjects, and in each group except English and Mathematics some choice is allowed the student.

The program of the student in the first year will be made up from the prescribed groups, except by special permission of the Faculty.

(3) At the end of the first year the student is required to choose a major department, in which he must complete, before graduation, work amounting to eighteen term hours. He may offer work already done in that subject in some one of the

prescribed groups as a part of the eighteen hours which he is required to give to his major department, but no subject indicated in the catalogue as elementary can be counted in such work. The major department and the plan of work for the first half-year must be reported by the student, in the proper form, upon registration on the opening day of the college year.

(4) Acting under the advice of the instructor in his major department, the student will make up a program of eighteen term hours in collateral subjects; that is, subjects tending to strengthen and assist his work in his major. The student's major instructor is to be his official adviser on general matters relating to his college course.

(5) The remaining forty-two term hours of the required aggregate are to be made up by the free election of the student from the various subjects offered, limited only by special restrictions applied to certain subjects.

(6) Upon the satisfactory completion of the aggregate requirement, the student is entitled to receive the Bachelor's degree, but no student shall be granted a degree in less than four years of residence, unless he shall have obtained Grade B as an average for his entire work.

### Summary.

| | | | |
|---|---|---|---|
| Prescribed work . . . . . . . . . . . . . | 50 | term | hours. |
| Major department . . . . . . . . . . . . . | 18 | ,, | ,, |
| Collateral subjects . . . . . . . . . . . . | 18 | ,, | ,, |
| Free electives . . . . . . . . . . . . . . | 42 | ,, | ,, |
| | 128 | ,, | ,, |

### For S. B.

The requirement for the degree of Bachelor of Science is the satisfactory completion of one hundred and twenty-eight term hours, according to the programs for the General Science Course, Special Courses in Biology and Chemistry, and Medical Preparatory Course, on pages 89 to 92. The highly specialized character of these courses leaves only a small allowance of time outside the prescribed subjects, but there is a limited amount of time at the disposal of the student for free election.

The requirements for the degree of Bachelor of Science in Engineering are given in connection with the detailed statement of the Engineering Courses on page 93 and following.

# Departments of Instruction.

## MAJOR DEPARTMENTS.

Any of the following may be chosen as major departments: —

- ENGLISH.
- ENGLISH LITERATURE.
- GERMAN.
- FRENCH.
- LATIN.
- GREEK.
- PHILOSOPHY.
- HISTORY.
- POLITICAL SCIENCE.
- MATHEMATICS.
- PHYSICS.
- CHEMISTRY.
- BIOLOGY.
- ENGINEERING.

In the subjoined statement of the work done in the different departments, the name of the major instructor is that given at the head of each department which offers a major course. In other cases the name is given of the instructor in general charge of the department. Names of instructors in charge of each subject are appended to the brief statement of the subject itself.

Bracketed subjects will not be given during the current year. In many cases alternates are indicated, which fill their places in the program for this year. All subjects continue through the year unless otherwise indicated.

A tabular view of the program of hours assigned to the subjects in the courses in Liberal Arts follows the subjoined statements of the several departments. No two subjects assigned to the same hour can be taken simultaneously by any student.

## ENGLISH.

### Professor Shipman.

The course of instruction in English aims at both theoretical knowledge and practical results. It begins with extemporaneous composition in the Freshman year. In this exercise, which is weekly, formal theme-writing is avoided. Topics are

assigned, with some variety of method, at the time of writing, usually not the same topic for all. The brief essays are subject to criticism both in class and with the individual writers. The more formal study of Rhetoric begins with the second year. If a text-book is used as the basis of instruction, it is made, as far as possible, a help to the intelligent discussion of principles, rather than a burden to be carried. Rhetorical precepts are applied in the criticism of this course, and especially in composition, which is required to the middle of the third year. The student's work in literature and other departments of college study is made to furnish real occasion, as well as material, for the preparation of essays. The required Rhetoric may be followed by an elective course in some of its applications, or exclusively in composition. Major students in English will be expected to make English Literature their principal collateral.

### SUBJECTS.

1. — Composition. Lectures, discussion of papers. *One hour a week for the first year. Tuesday at* 2. PROFESSOR SHIPMAN.

2. — The Theory and Practice of Composition. Lectures and readings; criticism and discussion of themes. *Monday, Wednesday, and Friday at* 10.45. MR. WHITTEMORE.

3.— The aim in English 3 is to emphasize the fundamental function of expository writing, and to aid the student to gain clearness, ease, and rapidness of expression. The written work consists of five themes each week. *Monday and Friday at* 9.45 (*first half-year*). MR. WHITTEMORE.

4. — Three kinds of writing, narration, description, and exposition, are discussed, and specimens from eminent authors are studied. The written work consists of two themes each week. *Tuesday and Thursday at* 8.45 (*first half-year*). MR. WHITTEMORE.

5. — Argumentative Composition, a study of its requirements as observed by successful writers, with constant practice by the student. The written work consists of two themes or their equivalent each week. *Two hours a week* (*first half-year*). PROFESSOR SHIPMAN.

Subjects 1 and 2, with 3, 4, or 5, and Oratory 1, will constitute the prescribed work in English.

6. — Essays, with special attention to the construction of extended

discourse. Weekly papers, plans, free discussion, individual criticism. *Three hours a week (second half-year).* PROFESSOR SHIPMAN.

7. — Forensics. This subject differs from 5 in directing attention chiefly to the requirements of debate, including the preparation of briefs. The work is wholly written. *Three hours a week (first half-year).* PROFESSOR SHIPMAN.

8. — Rhetoric (advanced course). The Principles of Style; the Elements of Criticism. Elective for students who have completed with credit the prescribed work in English, and for such others as may be approved by the instructor. *Monday, Wednesday, and Friday at* 11.45 *(first half-year).* PROFESSOR SHIPMAN.

9. — Composition (advanced course). Elective for students who have taken Subject 8 in addition to the prescribed work in English. *Monday, Wednesday, and Friday at* 11.45 *(second half-year).*
PROFESSOR SHIPMAN.

## ORATORY.

### PROFESSOR MAULSBY.

It is intended that the study of oratory shall be of practical benefit to the general student, whether or not he looks to professional pursuit of the art. Exercises are practised in correct breathing, the production of tone, and in gesture; moreover, individual faults are pointed out and remedies suggested. The work in the required subject aims at securing reading that shall be intelligent, natural, and forcible. In this subject the principles that underlie all successful public speaking are indicated, and, so far as possible, these principles are applied in practice. In the elective courses, opportunity is offered for specializing, during two successive years, in either dramatic reading, or in senatorial oratory. In connection with oratory as a means of persuasion, it is urged that students take related subjects in English composition. English 5 is suggested as furnishing valuable aid in connection with Oratory 3, and the practice in formal oral debate has been assigned to the second half-year as properly following the thorough drill in forensic composition afforded by English 7.

### SUBJECTS.

1.— The Principles of Oratory Exemplified in Practice. Class exercises in vocalization and gesture. (*a*) *Tuesday at* 8.45. (*b*) *Wednesday at* 2.

2.— Study of Selections from Shakespeare and Browning. Individual presentation of standard poetry and prose. *Tuesday at* 2.

3.— Study of Selections from the Great Orators. Individual presentation of forensics. *Thursday at* 2.

4.— Dramatic Rendering. Study and delivery of scenes from the standard drama. The possible public presentation of a play. *One hour for the year. Hour to be arranged.*

5.— Formal Oral Debate. The practice of debate, under the usual parliamentary forms of a deliberative body. The possible presentation of a public debate. *Two hours for the second half-year. Hours to be arranged.*

## ENGLISH LITERATURE.

### Professor Maulsby.

The study of our literature offers opportunity for acquaintance with the work of selected writers, from the beginning to the present. Intelligent appreciation of the author's thought and of his characteristic mode of expression is the immediate result held in view. Biographical and philological details, the effect of environment, and the mass of published criticism that clusters about the great names are not neglected, although given a subordinate place. The method at first pursued demands attentive reading of much more than can be considered in the class-room, frequent written expression of literary judgments, and occasional private investigation of topics not otherwise treated. The library contains multiple copies of many of the authors read.

It is believed that students of literature will best begin with the first two subjects, taking them together, or in successive years. In the subjects numbered from 3 to 7, the study of linguistic forms is not necessary, which must be required in greater or less degree in the subjects numbered from 8 to 11. But in all subjects the thought-content is regarded as the thing of prime importance. The seminary method is employed in the advanced classes. Students undertaking a line of research are expected to have gained the ability to pursue independent investigation among the books of neighboring libraries. Appropriate collateral subjects are English, Philosophy, French, German, and History, the correlation of studies to be determined in each case by the aims of the student.

Subjects in brackets will be given in 1897–98.

### SUBJECTS.

1. — General View of the Whole Field. Lectures, examinations, and required reading. *Monday at* 10.45.
MR. EARLE, MR. WADE, MR. WHITTEMORE, PROFESSOR MAULSBY.

2. — American Literature. Lectures, required reading, special topics, essays. *Monday, Wednesday, and Friday at* 3.
PROFESSOR MAULSBY.

3. — The English Romantic Movement. Lectures, reading, individual treatment of authors not studied in the class. *Monday, Wednesday, and Friday at* 9.45 (*second half-year*). PROFESSOR MAULSBY.

4. — Poets of the Victorian Era. Lectures, reading, individual treatment of authors not studied in the class. *Monday, Wednesday, and Friday at* 9.45 (*second half-year*). PROFESSOR MAULSBY.
[This subject will be given in 1898–99.]

[5. — Prose of the Nineteenth Century. Lectures, reading, brief critical essays. *Three hours for the first half-year. Hours to be arranged.* MR. WHITTEMORE.]

6. — Browning. Poems, collateral reading, lectures, brief critical essays. *Three hours for the first half-year. Hours to be arranged.*
MR. WHITTEMORE.

7. — Poetry and Drama of the Restoration. Lectures, parallel reading, essays. *Monday, Wednesday, and Friday at* 3 (*second half-year*). MR. WADE.

8. — Shakespeare. Reading of twenty-five plays, lectures, examinations, brief critical essays. *Monday, Wednesday, and Friday at* 9.45 (*first half-year*). PROFESSOR MAULSBY.

*Hours to be arranged* (*second half-year*). MR. WHITTEMORE.

[9. — Chaucer. Study of forms and pronunciation, reading of selections from the Canterbury Tales and the minor poems, essays. *Monday, Wednesday, and Friday at* 9.45 (*second half-year.*)
PROFESSOR MAULSBY.]

10. — Anglo-Saxon. Study of the grammar, and the reading of prose selections, during the first half-year. The subject may be continued through the second half-year, when the whole of Beowulf may be read. *Tuesday, Thursday, and Saturday at* 10.45.

Mr. Earle.

11. — Advanced Anglo-Saxon. Chronological development of Anglo-Saxon prose and poetry. *One hour for the year. Wednesday at* 10.45. Mr. Earle.

12. — English Versification. Study of poetic forms and practice in poetic composition. *One hour for the year. Hour to be arranged.*

Professor Maulsby.

[Given on the application of four qualified students.]

13. — History of English Criticism. From Sir Philip Sidney to Walter Pater. *One hour for the year. Hour to be arranged.*

Professor Maulsby.

[This subject will be given in 1898–99.]

14. — Development of a Literary Form, as (*a*) the drama, (*b*) the novel, (*c*) the lyric.

[(*a*) Development of the English Drama. Special emphasis will be placed upon the Elizabethan dramatists.]

(*b*) Development of the English Novel. *Friday at* 10.45.

Professor Maulsby.

15. — Special Research. Any student sufficiently advanced may pursue a special line of inquiry in the investigation of some restricted field of British or American literature, under the direction of the department.

## GERMAN.

### Professor Fay.

The aim of the department is twofold, according as the student has entered with the elementary or advanced requirement. In the former case it is to lead him in the briefest possible time to such a mastery of the language as will enable him to use it as a source of information, and medium of literary culture; where this preliminary work has already been done, to afford this literary culture itself, together with such historical and linguistic knowledge as may properly accompany advanced work in a literary department. Hence, in the elementary subjects, facility and accuracy of translation are sought by means of copious reading and careful grammatical drill; in the intermediate year the classic masterpieces are read for their own sake, together with such historical material as will throw light upon the epoch in which they were written or with which they deal; in the advanced work the systematic study of the history of the literature is undertaken, and opportunity is afforded for acquiring a knowledge of the earlier literary forms. Composition forms an important element in instruction and in the practice of the language. Though no attempt is made to teach the student to speak the language, he is trained from the outset to hear and to understand it when spoken, chiefly for the sake of the reflex influence of such practice upon pronunciation.

Six consecutive subjects are offered. While it is not impossible to take them all within the four college years, the scheme is based upon the supposition that the earlier ones will have been taken in the preparatory school.

### SUBJECTS.

1. — Elementary German. Joynes-Meissner Grammar, with Lewis's Exercises; Bernhardt's Im Zwielicht, II; Riehl, Burg Neideck; Buchheim's Balladen und Romanzen. *Tuesday, Thursday, Saturday at* 9.45. PROFESSOR FAY.

German 1 is the equivalent of the entrance requirement in Elementary German, and should be taken in the Freshman year by all who enter with a condition in that subject.

2. — Intermediate German. Reading, Grammar, and Composition. Review of grammatical principles, especially with reference to syntax. Reading of modern prose and poetry, such as Riehl, Der Fluch der Schönheit; Freytag, Aus dem Staat Friedrichs des Grossen; Scheffel, Der Trompeter von Säkkingen. *Tuesday, Thursday, and Saturday at* 8.45. MR. O. F. LEWIS.

German 2, when taken by entering students, presupposes two years' study of the language in the preparatory school. It is possible for a student who has done with distinction the work of German 1, and who shall do a prescribed amount of outside reading, to omit this subject and enter German 3.

3. — First half-year. Course for the rapid reading of modern prose. Scheffel, Ekkehard; Freytag. Second half-year. Course introductory to the classic authors. Lessing, Minna von Barnhelm;

Schiller, Die Jungfrau von Orleans; Goethe, Hermann und Dorothea. *Monday, Wednesday, and Friday at* 9.45. PROFESSOR FAY.

For entering students German 3 presupposes three years of preparatory study. It may be taken as a half-subject by more advanced students.

4. — Schiller and Goethe. Lyrics; Egmont; Maria Stuart; Wallenstein; with collateral reading in historical prose. *Tuesday, Thursday, and Saturday at* 11.45. MR. O. F. LEWIS.

German 4 is open to entering students who have had four years of preparatory study, or who, having passed with distinction the entrance examination in Advanced German, also pass with credit a special examination in advanced grammar and sight translation.

5. — Advanced Course in Lessing and Goethe. Nathan der Weise, Emilia Galotti, Laocoön; Tasso, Iphigenie, Faust; with collateral reading. *Monday, Wednesday, and Friday at* 4. PROFESSOR FAY.

[6. — History of German Literature: Vilmar, Kluge, with illustrative works for leading epochs. Course in Middle High German: Das Nibelungenlied; Walther von der Vogelweide. A thesis is required of candidates for honors. PROFESSOR FAY.]

7. — German Composition. First half-year: Stein's Exercises, original themes, dictation, conversation. Second half-year: White's Exercises, with more advanced work in original themes, oral and written translation into German, and conversation. This course is offered to students who have satisfactorily completed German 2 or its equivalent. *Monday and Friday at* 4. MR. O. F. LEWIS.

## FRENCH.

### PROFESSOR FAY AND PROFESSOR LEWIS.

The plan and scope of the department are, in general, the same as those of the German department, to the statements of which the student is referred. Six consecutive subjects are offered.

1. — Elementary French. The essentials of grammar, with composition; Grandgent's Short Grammar, with College Exercises; a French Reader; reading of short works of modern authors in prose and verse. *Tuesday, Thursday, Saturday, at* 9.45.
PROFESSOR LEWIS AND MR. EARLE.

French 1 is the equivalent of the entrance requirement in Elementary French, and should be taken in the Freshman year by all who enter with a condition in that subject.

2. — Intermediate French. Reading, Grammar, and Composition. Review of grammatical principles, especially with reference to syntax; exercises in composition ; short weekly themes; reading of modern fiction and drama, such as Merimée's Colomba and Sandeau's Mademoiselle de la Seiglière. *Tuesday*, *Thursday*, *Saturday*, *at* 8.45.
PROFESSOR LEWIS AND MR. EARLE.

French 2, when taken by entering students, presupposes two years' study of the language in a preparatory school. It is possible for a student who has done with distinction the work of French 1 in college, and who shall do a prescribed amount of outside reading, to omit this subject and enter French 3.

3. — First half-year. Course for the rapid reading of modern authors: Thiers, Taine, de Vigny. Second half-year. Introductory work in Seventeenth Century Classics: Corneille, Racine, Molière, Boileau, with collateral reading concerning the period. Review of grammatical principles in Ploetz's Nouvelle Grammaire Française, and occasional brief themes. *Monday, Wednesday, and Friday at* 8.45.
PROFESSOR LEWIS AND MR. EARLE.

For entering students, French 3 presupposes three years of preparatory study. It may be taken as a half-subject by more advanced students.

4. — First half-year. Literature and Manners of the Seventeenth Century. Crane's Société Française au XVII$^{e}$ Siècle; Molière, Les Précieuses Ridicules, Les Femmes Savantes; Saint-Simon; Madame de Sévigné. Second half-year. Literature of the Eighteenth Century. The Novel, the Drama, Philosophical Essays. *Monday*, *Wednesday*, *Friday*, *at* 8.45.
PROFESSOR FAY.

French 4 is open to entering students who have had four years of preparatory study of the language, or who, having passed with distinction the entrance examination in Advanced French, also pass with credit a special examination in advanced grammar, composition, and sight translation. Juniors and Seniors whose major department is French may be permitted to take 4 and 5 in the same year.

5. — Literature of the Nineteenth Century. The Drama, Poetry, the Novel, Criticism; Chateaubriand, Hugo, Lamartine, de Musset, Balzac, Sainte-Beuve, and selections from contemporary authors; History of French Literature presented by lectures and collateral readings. *Monday*, *Wednesday, and Friday at* 3.
PROFESSOR LEWIS AND ASSISTANT PROFESSOR WADE.

6.— Demogeot, Littérature de la Langue Française, with illustrative texts for principal epochs. Course in Historical Grammar and Old French: Brunot, Grammaire Historique de la Langue Française, Bartsch, Chrestomathie de l'Ancien Français. A thesis is required of candidates for honors. *Monday, Wednesday, and Friday at* 11.45. PROFESSOR FAY.

## ITALIAN.

### PROFESSOR FAY.

The work offered in Italian is open to those only who have had two years of college study in French. With such previous training, the student is able to acquire with rapidity a reading knowledge of the language, and thus to become acquainted within the year with the characteristics of contemporary and classic literature.

#### SUBJECT.

1.— Grandgent's Grammar and Composition; De Amicis, Cuore; Maffei, Merope; Dante, Divina Commedia (Scartazzini's edition). *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR FAY.

## LATIN.

### PROFESSOR DEARBORN.

The work in this department is arranged and conducted with a view to giving students (1) a good knowledge of the Latin language and of a portion of its literature, and, as a result of careful and critical translation of Latin, greater facility and accuracy in the use of English; (2) an acquaintance with the early history of Rome, the fundamental principles of the Roman constitution, and the important features of the public and private life of the people, acquired partly by reading Latin authors, partly by special study of these subjects; and (3) the mental training by which a man is better equipped for any pursuit in life, and the habit of independent study and research which is essential to all true scholarship.

In the early part of the work the forms and construction of the language are carefully studied. Translation, both oral and written, into appropriate English, holds an important place in all the work of the department. Reading without translation is practised to some extent. Considerable attention is given to the comparative etymology of Latin, Greek, and English. Lectures are given on the history of the Latin language and literature. The advanced work is especially adapted to the needs and attainments of those who elect the study, and more attention is given to the subject-matter and to the style and spirit of the authors read.

The work in Roman history and archæology is carried on by means of recitations, illustrated lectures, and private investigations by the students, the results of which are presented in brief essays, read and criticised before the class.

### SUBJECTS.

1.— Livy; Cicero, Cato Major; Horace; Antiquities and Legendary History of Rome, with illustrated lectures; lectures on the History of the Latin Language and Literature. *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR DEARBORN.

Latin 1 is introductory to all later subjects, and will be taken by those choosing Latin as a prescribed language.

2.— Horace; Cicero, Tusculan Disputations; Tacitus, Germania and Agricola. *Monday, Wednesday, and Friday at* 11.45. PROFESSOR DEARBORN.

3.— Juvenal; Pliny; Plautus; Classic Archæology and Art. *Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR DEARBORN.

4.— Cicero; Terence; Catullus; Quintilian. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR DEARBORN.

5.— Livy; Cicero; Latin Composition. *Wednesday and Friday at* 10.45. PROFESSOR DEARBORN.

Latin 5 is supplementary to Latin 1, and when elected should be taken simultaneously with it in the Freshman year.

6.— Cicero (Brutus and Second Philippic); Plautus or Terence; Lucretius (Books I–III); Tacitus (Dialogue or Annals); Comparative Grammar of Greek and Latin (King and Cookson or Henry); History of the Latin Language and Literature. *Three hours a week.* PROFESSOR DEARBORN.

This subject is for graduate students.

## GREEK.

PROFESSOR SCHNEIDER AND ASSISTANT PROFESSOR WADE.

The aim of the department is to treat the Greek language not merely as a disciplinary instrument, but as a factor in the broadest and most liberal culture. Throughout the course the practice of reading at sight is encouraged, and especial effort is made to develop such facility that the student may resort with pleasure to the masterpieces of the Greek language, and find in them the delights and inspirations of a noble literature. To this end also considerable attention is paid to the style and literary characteristics of the authors read. The relations of Greek to the Latin, German, and English languages are discussed, and the course is shaped to develop, discipline, and enrich the linguistic resources of the student. Reading without translation is encouraged from the beginning. Incidentally, studies are made of the customs and daily life of the people. Discussion relative to the laws, philosophy, and religion of the Greeks is introduced, and some attempt is made to exhibit the indebtedness of modern civilization to Hellenism.

### SUBJECTS.

1. — Elementary. Goodwin's Grammar; Graves and Hawes's First Book; Xenophon (Anabasis); Homer (Iliad I–III); Plato (Apology and Crito); Woodruff's Greek Composition. *Double subject. Monday, Wednesday, and Friday at* 11.45, *and Tuesday, Thursday, and Saturday at* 9.45. ASSISTANT PROFESSOR WADE.

Greek 1 is intended for students entering without Greek and wishing to begin the study of that language. It is assumed that their previous training in linguistic studies will enable them to proceed rapidly and accomplish in one year all the work usually done in preparation for college.

2. — Xenophon (Memorabilia or Cyropædia); Herodotus (Books VI and VII); Homer (Odyssey); Sophocles (Œdipus Rex); Greek Composition. *Monday, Wednesday, and Friday at* 2.
ASSISTANT PROFESSOR WADE.

Greek 2 is the course for students who have passed the entrance requirements in Greek. Particular attention is given to the syntax of the language and to the development of the dialects. Incidentally, study is made of the customs and daily life of the people. The course is supplemented by lectures on Greek literature, Hellenic antiquities, and on the literary characteristics of the authors read.

3.—Lysias (Selected orations); Antiphon (Herodes and Choreutes); Demosthenes (On the Crown); Euripides (Medea); Æschylus (Seven against Thebes); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. ASSISTANT PROFESSOR WADE.

[4.—Andocides (Mysteries and On the Return); Isocrates (Panegyric); Æschines (Against Ctesiphon); Euripides (Hippolytus); Æschylus (Prometheus Bound); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. ASSISTANT PROFESSOR WADE.]

Greek 3 and 4 are offered in alternate years and are open to those who have passed in Greek 2. It is intended in either case to give the first term to the critical study of the orators and the second to the dramatists. Rhythm and metre are studied in connection with the dramatists, and modes and tenses with the orators. At suitable points, lectures on the laws, oratory, theatre, and religion of the Greeks are given.

5.—Theocritus (Idylls and Epigrams); Pindar (Olympian and Pythian Odes); Tyler's Selections from Greek Lyrics; reading at sight in the Odyssey. *Hours to be arranged with the instructor.*
PROFESSOR SCHNEIDER.

Greek 5 is open to those who have completed Greek 3 or 4. Much attention is paid to the development of Greek lyric poetry, and the various theories of rhythm and metre are discussed. Lectures on appropriate topics are given in connection with the work.

6.—Plato (Symposium); Aristotle (Ethics, Books I–IV, or Politics); reading at sight in Herodotus and Lucian. *Hours to be arranged with the instructor.* PROFESSOR SCHNEIDER.

Greek 6 is open to those who have completed Greek 3 or 4. A critical study of the authors read is supplemented by a general survey of Greek philosophy.

7.—Topics in Greek History: reading at sight; Greek Composition. *Half-subject. Hours to be arranged with the instructor.*
ASSISTANT PROFESSOR WADE.

Greek 7 may be taken by any one who has had the equivalent of Greek 1. It is especially suited to Freshmen intending to elect Greek as their major.

[8.—Demosthenes (Private, Hellenic, Olynthiac, and Philippic

Orations): Sophocles (Plays and Fragments); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30.

ASSISTANT PROFESSOR WADE.]

9. — Study of the Sources of Greek History; critical reading of Herodotus, Thucydides, Xenophon, and Diodorus Siculus; Greek Composition. *Wednesday and Friday from* 4 *to* 5.30.

ASSISTANT PROFESSOR WADE.

[10. — Plato (Gorgias, Phaedo, Republic I–V); Greek Composition. *Wednesday and Friday from* 4 *to* 5.30.

ASSISTANT PROFESSOR WADE.]

Greek 8, 9, and 10 are rotated, so that each is given every third year, 9 being the subject for 1896–97. These subjects are intended for those wishing to pursue graduate work in the department. They may, however, on permission from the instructor, be taken by any one who has completed Greek 3 or 4. Independent work is encouraged throughout, and theses are read and criticised by the students. Lectures are given in 8 on legal antiquities, in 9 on Greek history, and in 10 on the life, works, style, and philosophy of Plato.

## PHILOSOPHY.

### PROFESSOR SHIPMAN.

Together with historical and critical work in Philosophy, this department includes Logic, Psychology, and Ethics. Students choosing it as their major department will be expected to take at least three term hours in each of these subjects, and to make up three years of continuous work. Half subjects are offered for the most part, and the preparatory subjects are so far complete that any of them may be taken by students not intending to pursue special studies in the department.

In Psychology discussion follows chiefly the lines of modern investigation. A text-book affords the basis of study, and is supplemented by such means as are available without laboratories. In a second term the subject may be continued by extensive reading, including periodical literature, with full discussion by members of the class, and by the preparation of theses. The first subject in Logic includes an elementary consideration of inductive reasoning. The advanced course may be varied according to the conditions of each class.

The work in Ethics embraces ethical theory and practice, and ethical questions are also discussed in their psychological and metaphysical bearings. Lectures are given, and an elementary text-book forms the basis of the discussion.

### SUBJECTS.

1. — The History of Philosophy. First half-year: the pre-Socratic Greeks; Socrates, Plato, and Aristotle; the Stoics and Epicureans. Second half-year: the Period of Enlightenment from Locke to the death of Lessing (1689–1781); German Philosophy from Kant to Hegel (1781–1820), with special attention to Kant and Schopenhauer. Lectures, theses, and wide reading. *Monday, Wednesday, and Friday at* 9.45. MR. CUSHMAN.

This course is an introduction to Philosophy and is designed for beginners. It is extremely advisable that the student should understand the literature of Philosophy before taking any other course in constructive or critical Philosophy.

2. — Psychology. Discussion, following chiefly Sully's Outlines. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*). PROFESSOR SHIPMAN.

3. — Psychology (advanced). *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*). PROFESSOR SHIPMAN.

4. — Logic, especially Deductive, with an elementary consideration of fallacies. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). PROFESSOR SHIPMAN.

5. — Logic (advanced course), especially inductive. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*). PROFESSOR SHIPMAN.

Much attention is paid to practical exercises. Philosophy 5 is open only to such students as have, with distinction, completed 4. In it fallacies are discussed at much greater length and recent modifications of logical doctrine are examined.

6. — Ethics. Elementary principles; discussion of ethical theories; practical questions. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*). MR. CUSHMAN.

7. — Practical Ethics. Contemporary Problems, Education, Charities, Temperance, Socialism. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*). PROFESSOR TOUSEY.

Philosophy 7 follows 6 in natural sequence, as the application of ethical theory to the practical questions of the day, but the practical side is not neglected in 6.

8. — The Philosophy of Religion. *Monday, Wednesday, and Friday at* 3 (*first half-year*). PROFESSOR KNIGHT.

The study of the Philosophy of Religion begins with a classification of the great questions in Theology, thus giving an outline history of doctrines, with emphasis on their logical relations. The next step is the testing of the chief doctrines by known scientific facts. Lastly, the results are arranged on scientific principles. The method includes library work, with references to the writings of the leaders of theological thought in all historic times. Lectures and criticisms in the class-room supplement the students' personal investigations.

9. — Metaphysics; the fundamental problems of Philosophy considered constructively; problems of knowledge, nature, self, and self-consciousness, theism, teleology, freedom, and causation; realism and idealism. Lectures and critical discussion in the class of the text of Deussen's Elements of Metaphysics and Carus's Primer of Metaphysics. *Monday, Wednesday, and Friday at* 10.45 (*first half-year*). MR. CUSHMAN.

This subject has as its purpose to induce the student to reflect upon the final problems of life, and to form independent and rational conclusions.

[10. — Descartes, Leibnitz, and Spinoza. Critical and expository study of the authors, lectures, readings of the text, theses. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. CUSHMAN.]

[11. — Kant and Schopenhauer; review of the Romance Period. Critical study of the authors, lectures, readings, and theses. Open to students who have taken a half-year, at least, in Philosophy 1. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. CUSHMAN.]

[12.— English Philosophy from Hobbes to Hume. Method of work similar to 10 and 11. Open to students who have taken a half-year, at least, of Philosophy 7. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*). MR. CUSHMAN.]

Philosophy 10, 11, and 12 are given in successive years. Philosophy 10 will be given in 1897–98.

## HISTORY.

MR. START.

The subjects in this department are included under the heads of general European, English, and American history, and special advanced studies. History 1 is the introductory subject by which the student is prepared for more specialized work. Under History 2 there are offered from time to time studies of important epochs in European history, or of single nations. History 3 is devoted to England, and 4, 5, and 6 to our own country. Opportunity is thus given during the undergraduate course to obtain a conspectus of those fields of history most important to the American student. The method of work is briefly explained in connection with the appended statement of subjects. In the work of the department the essential unity of history, and the consequent bearing of the experience of the past upon the problems of the present, are kept constantly in view. The chief aim is not the mere accumulation of facts, but an adequate comprehension of the meaning and method of historical science.

Major students will in most cases be required to choose their collateral subjects in the fields of Political Science or Philosophy, though variations may be made when it seems advisable. English Literature will be a natural collateral for those working along the lines of English history. Political Science 2 and 5 are essentially historical. A reading knowledge of French and German is always useful for the student of history, and is necessary for anything approaching a thorough study of continental European history.

### SUBJECTS.

1. — General European History. A study of the elementary principles of historical science and of the outlines of European history to 1815. Two lectures weekly, class discussions, collateral reading, and practice work. *Tuesday, Thursday, and, at the pleasure of the instructor, Saturday at* 10.45. MR. START.

History 1 must precede all other subjects in History. It will not be accepted for an advanced degree. It is open to any student who has passed the requirements in History for admission to the College. A considerable amount of time will be given to the Middle Ages and the formative influences from which modern Europe has developed.

[2. — Studies of Periods in European History.

(*a*) Renaissance and Reformation.

(*b*) The Eighteenth and Nineteenth Centuries, with especial reference to the French Revolution and its results.]

[3. — English History.

(*a*) Social and Literary History of England. A study of the development of English society and of the historical aspects of English literature.

(*b*) Constitutional History of England.]

4. — American Colonial History. Spain, France, and England in the New World. The formation and social and political life of the colonies. Lectures, collateral readings, and topical reports. Open to students who have taken History 1. *Hours to be arranged (second half-year).* MR. START.

5. — Political and Constitutional History of the United States. The Revolution, formation of the Union, development of the Nation under the Constitution. Lectures, study of sources, and literature, theses, and topical work. Open to students who have taken History 1 and 4. *Monday, Wednesday, and Friday at* 11.45. MR. START.

History 4 and 5 form a continuous course in which similar methods are used. The collateral reading and topical work involve thorough study of the principal literature of American history and of the leading historical documents. While primarily for undergraduates, these subjects may be taken by graduates, and may count toward an advanced degree, but in such a case it is expected that the subject will be passed with high credit, and that some additional special work will have been done.

6. — Seminary in American History. Research work with the sources. *Full subject; meetings weekly or fortnightly, at the pleasure of the instructor.* MR. START.

In the seminary each student becomes an active historical investigator, examining the sources upon which history is based, and obtaining by personal experience an insight into the principles of research and criticism. Work of sufficient value done in the seminary will be preserved in the college library. Only students who have done with credit at least nine term hours of work, including History 4, in the department are eligible.

7. — Seminary for the study of the Philosophy and Methods of History. *Weekly meetings to be arranged with the instructor.* MR. START.

This seminary will be opened whenever two or more properly qualified candidates present themselves. It is intended primarily for graduates, especially for those who intend to teach history, but undergraduates of high standing, who have passed in not less than twelve term hours of work in the department, may be admitted by permission of the instructor. The members will work on independent but cooperative lines, and much attention will be given to methods of historical study and teaching. The hours of meeting will be so arranged that teachers of history in the schools may join the seminary.

8. — The Comparative History of Religions. Egypt, Babylon, Nineveh; Parseeism, Hinduism, Buddhism, Confucianism, Mohammedanism; with a study of the civilizations represented by these religions. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*).
PROFESSOR KNIGHT.

## POLITICAL SCIENCE.

### PRESIDENT CAPEN.

In this department are included subjects relating to Economics, Government, and Law.

The subject of Political Economy begins with an historical survey, the object being to trace the growth of economic ideas from the beginning, and to note the phases they have assumed among different peoples in the modern world. Then follows a consideration of the fundamental principles of economics. Students are assigned the task of making practical application of principles to the solution of present economic problems. Time is given to subjects of immediate and living interest, such as the labor question, socialism, the tenure of land, taxation, and finance.

In the study of Ancient Law the object is, first, to determine the nature of primitive jural conceptions, and, as far as possible, to ascertain how they have arisen and on what they are founded; then, to trace the transformations which these conceptions have undergone, particularly in the Roman jurisprudence and the legal systems that have a Roman root. The effect which legal speculations and doctrines have had, not only upon modes of procedure, but upon civil institutions, political principles, social and domestic life, is carefully studied. International Law follows in the second term. So far as the time allows, a treatment of the subject that is at once broad and practical is sought.

Political theory and the practice of government are treated in 5 and 6.

### SUBJECTS.

1. — Political Economy. Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, lectures, and independent investigation dealing with the history of economics, theories of production, consumption, distribution, etc.; problems of profits, wages, and labor. *Tuesday, Thursday, and Saturday at* 8.45.

President Capen.

2. — Ancient Law; Roman Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*). President Capen.

3. — International Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*).

President Capen.

4. — Research work in problems of Government or Economics for students electing Political Science as their major department, who have passed in 1, 2, and 3. President Capen.

5. — Political Science and Comparative Constitutional Law. A study of the origin and nature of the State, and the development of typical constitutions. Lectures, text-book work, collateral reading, and discussions. *Hours to be arranged.*

Mr. Start.

[6. — Constitutional Law and Municipal Institutions of the United States. Lectures, collateral reading, and discussions. Mr. Start.]

Subjects 5 and 6 will not be given in the same year. Due announcement will be made which, if either, will be given next year. In the former the work is based on Wilson's The State, and Burgess's Political Science and Comparative Constitutional Law; in the latter, on Bryce's American Commonwealth and some work on the Constitution. Both subjects presuppose some study of history. Political Science 5 must be preceded by History 1, and 6 must also be preceded or accompanied by History 5.

## MATHEMATICS.

### Professor Brown.

The study of Mathematics is required through the first year. The branches taught are: Algebra, through the subjects included in most college text-books previous to the theory of equations; Solid and Spherical Geometry; Plane Trigonometry, with its applications. Two objects are kept constantly in view: first, to acquire and hold certain mathematical facts for future use; secondly and mainly, to train the mathematical faculties so that the student may acquire the ability to deduce mathematical truths from those previously established. The class-room work of the instructors is a combination of lectures with questioning of the students to ascertain that the points presented are duly comprehended.

An opportunity to continue the study of Algebra and also a course in Determinants are offered at the middle of the first year. Plane Analytic Geometry is offered as an elective for the first half of the second year. This study may be continued with higher plane curves and Geometry of three dimensions during the second half of the second year. Differential and Integral Calculus is required for three half-years in the Engineering courses, and the subject is open as an elective to any student who has taken Plane Analytic Geometry.

### SUBJECTS.

1.—Bowser's College Algebra; Solid Geometry; Bowser's Plane Trigonometry. Applications of Plane Trigonometry. *Monday Wednesday, and Friday at* 8.45 (Division I). Mr. Jordan. *At* 9.45 (Division II). Professor Brown.

2.—Theory of Equations and Elements of Determinants. *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*). Professor Brown.

3.—Bowser's Analytic Geometry. Open to students who have taken 1. *Monday, Wednesday, and Friday at* 11.45 (*first half-year*). Professor Brown or Mr. Wren.

[See Engineering Courses.]

4.—Spherical Trigonometry; Projections of Triangles; use of Richards's Manual with the sphere. Open to students who have had 1. (*First half-year.*) Professor Brown.

5.—Higher Plane Curves; Analytic Geometry of Three Dimensions. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*). Professor Brown.

6. — Differential and Integral Calculus, Osborne's. *Three hours a week (second half-year).* Mr. Wren.

[See Engineering Courses.]

7. — Differential and Integral Calculus continued. *Two hours a week (first half-year).* Mr. Wren.

[See Engineering Courses.]

8. — Differential and Integral Calculus (advanced course). *Two hours a week (second half-year).* Professor Brown or Mr. Wren.

9. — Weld's Theory of Determinants; Hanus's Elements of Determinants. *Three hours a week (first half-year).* Mr. Wren.

10. — Differential Equations. *Two hours a week (first half-year).* Professor Brown.

[See Engineering Courses.]

11. — Method of Least Squares. Comstock and Merriman. *Two hours a week (second half-year).* Professor Brown.

[*Drawing* 1 (Descriptive Geometry) *is also a distinctively mathematical subject. For further subjects essentially mathematical, see subjects* 1 *and* 4 *in the department of Drawing, and subjects* 1, 3, *and* 8 *in the department of Civil and Mechanical Engineering.*]

## PHYSICS.

### Professor Dolbear.

The work in Physics begins with a consideration of General Physics, this being the subject to be taken by those electing Physics for their prescribed work in science, and the introductory subject for major students in Physics. A text-book is used, critical comments and much additional material are given, and frequent lectures are given with experiments. The aim is to present the science of Physics not as a series of detached subjects, but as a consistent body of doctrine in which mechanical principles hold throughout, and from which all the various phenomena are deducible. Hence in each branch there are frequent returns to these first principles. The rapid development of electrical science having quite outstripped text-books, this subject is treated wholly by lectures.

An elective course is offered of about twenty-five lectures upon the relations of Physics to other branches of natural science, introducing the doctrine of the conservation of energy as applicable to all. After this follows a more extended consideration of the fundamental questions in Physics. Spencer's First Principles is read, and its subject-matter thoroughly discussed.

In the Physical Laboratory beginners are given Stewart and Gee's Practical Physics, first volume, for a guide. They work for the most part independently, and each pursues a given subject till satisfactory results are obtained. Glazebrook and Shaw's Practical Physics is followed on the subjects of sound, heat, and light; Pickering's Manipulation and Kohlrausch's Measurements being also used to a limited extent. In electricity and magnetism Stewart and Gee's second volume is mainly followed, supplemented, in the case of engineering students, by parts of Gray's Absolute Measurements and Kempe's Testing. In all laboratory work each student records methods and results in a suitable note book, and is encouraged to do a few things well rather than to go carelessly over a larger ground. Students who are preparing themselves to become teachers of Physics have an opportunity to perform most of the experiments needed for illustrating elementary work.

### SUBJECTS.

1. — General Physics. Lectures, recitations, and experiments. To be taken by students choosing Physics for their prescribed science subject, and introductory to other subjects in Physics. *Monday, Wednesday, and Friday at* 10.45. PROFESSOR DOLBEAR.

3.— Electricity: Thompson's Elementary Lessons in Electricity and Magnetism. Lectures and recitations. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*). MR. H. G. CHASE.

4. — Physical Laboratory. Mechanics, Sound, Heat, and Light. *Six hours a week* (*second half-year*). MR. H. G. CHASE.

5. — Electricity: Theory of Measurements. *Three hours a week* (*first half-year*). Electrical Laboratory: Simple Measurements and Tests. *Two hours a week.* MR. H. G. CHASE.

6. — Relation of Physics to Sociology. Lectures. *Tuesday and Thursday at* 2 (*first half-year*). PROFESSOR DOLBEAR.

7. — Spencer's First Principles. *Tuesday and Thursday at* 2 (*second half-year*). PROFESSOR DOLBEAR.

## CHEMISTRY.

PROFESSOR MICHAEL AND ASSISTANT PROFESSOR DURKEE.

The work in the department begins with Chemistry 1, which is open for election by the students of the courses in Liberal Arts, and is required of engineering students in their second year. The instruction is by means of lectures, recitations, and laboratory work. The lectures, illustrated by numerous experiments, are intended to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including a brief account of the chemistry of the carbon compounds and the principal technical processes. One half of the time devoted to this subject is given to practical work in the laboratory, and the student will have an opportunity to verify some of the chemical theories, and to become familiar with substances and their chemical behavior. The lectures are supplemented by recitations and written examinations. An opportunity to continue the study of theoretical and inorganic chemistry is afforded by subjects 11 and 12. In connection with subject 11 problems in stoichiometry and chemical reactions will be considered, and the study of theoretical chemistry taken up. This subject is continued in 12, in connection with a course on advanced inorganic chemistry. Facility is given to those who wish to supplement the above course of lectures with laboratory practice by taking subject 14, when the student will undertake some of the more difficult inorganic experiments and preparations; thus obtaining greater experience in chemical experimentation. The last two subjects may be taken as graduate work.

The instruction in Qualitative Analysis extends through a year, and consists of two subjects (2 and 3) taught in part by lectures and recitations, but mainly by work in the laboratory. During the advanced course the student is required to analyze correctly a large number of mixtures and minerals. Subject 6 is intended to teach the use of the blowpipe in chemistry, together with the tests that are of special value in determinative mineralogy. Crystallography will be taken up in connection with this subject. Quantitative Analysis is mainly taught by laboratory practice, in order that the student may attain that skill in manipulation which is necessary for this kind of work. In subject 4 the student is required to analyze the simpler salts and minerals, and in the advanced subject 5, the more complicated minerals, ores, commercial and food products, etc. The analysis of organic substances is included in subject 5. Gas analysis (subject 9) is taught by lectures and laboratory work, principally in the use of technical methods. Assaying (subject 7) is adapted to familiarize the student with the practical methods of sampling and assaying gold, silver, and lead ores. The above subjects cover a comprehensive study of analytical chemistry, and are intended to give the student such a thorough theoretical and practical knowledge as to prepare him for analytical work of any description. The course of lectures in Metallurgy (subject 8), with recitations, is intended to give the student a general idea of fuels, ore dressing, refractory building materials, and the more important technical methods of extracting iron, copper, and silver.

The study of Organic Chemistry begins with a course of lectures, illustrated by experiments, and recitations, which cover the general principles, methods, and description of the most important organic compounds. For those who wish to specialize in this science an opportunity is given by subject 13, in which by lectures the underlying theories of organic chemistry will be fully discussed and the relations between them and organic reactions explained. The laboratory practice in organic chemistry (subject 15) may be begun at the same time as subject 10 and continued with 13. It includes the methods for determining the physical properties and molecular weights of organic substances and the preparation of compounds. When taken in connection with subject 13, one or more researches of special importance will be repeated by the student. The subjects 12, 13, 14, 15, and 16 may be taken as graduate work.

Subjects 12, 13, 14, and 15 are especially designed to lead up to research work in chemistry, and students who have taken them, with subject 5, are prepared to enter on this line of advanced work. Ample facilities are offered for the successful prosecution of investigations in inorganic and organic chemistry.

Two laboratory hours are equivalent to one term hour, except in the special course in Chemistry, for the degree of Bachelor of Science, in which three hours of work in the laboratory count as one term hour. The quantitative and organic laboratories are open from nine to five o'clock daily, Saturday afternoons excepted.

### SUBJECTS.

1.—General Chemistry. Lectures, recitations, and laboratory work. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

2.—Qualitative Analysis. Basic Analysis. *Lectures, laboratory work, and recitations on Tuesday and Thursday from* 2 *to* 5 ; *also on Saturday*, 8.45 *to* 11.45, *for students of the special course in chemistry* (*first half-year*). ASSISTANT PROFESSOR DURKEE.

3.—Qualitative Analysis. Acids; Analysis of Salts, Commercial and Natural Products. *Lectures, laboratory work, and recitations on Tuesday and Thursday from* 2 *to* 5 ; *also on Saturday*, 8.45 *to* 11.45, *for students of the special course in chemistry* (*second half-year*).
ASSISTANT PROFESSOR DURKEE.

4.—Quantitative Analysis. Gravimetric and Volumetric Analysis; Analysis of Minerals. *Lectures and laboratory work. Three hours a week.* DR. HARTMAN.

5.—Quantitative Analysis (advanced course). Analysis of Minerals, Ores, Water, Food Products, Organic Analysis, etc. *Laboratory work. Three hours a week.* DR. HARTMAN.

6.—Crystallography and Determinative Mineralogy. Open to students who have taken 1, 2, and 3. *Lectures and laboratory work. Two hours a week* (*first half-year*). MR. LEIGHTON.

7.—Fire Assay. Open to students who have taken 1, 2, 3, and 4. *Two hours a week* (*second half-year*). MR. LEIGHTON.

8.—Metallurgy. Lectures and recitations. Open to students who have taken 1. *Three hours a week* (*second half-year*).
ASSISTANT PROFESSOR DURKEE.

9.—Gas Analysis. Lectures and laboratory work. Open to students who have taken 1, 2, 3, and 4. *One hour a week.*
DR. HARTMAN.

10.—Organic Chemistry. Lectures and recitations. Open to students who have taken 1. *Three hours a week* (*first half-year*).
DR. BUCHER.

11.— Theoretical Chemistry. Lectures and recitations. Open to students who have taken 1. *Two hours a week (second half-year).*
Dr. Bucher.

12.—Theoretical and Inorganic Chemistry (advanced course). Lectures and recitations. Open to students who have taken 1 and 11. *Three hours a week (first half-year).* Professor Michael.

13.— Organic Chemistry (advanced course). Lectures and recitations. Open to students who have taken 1 and 10. *Three hours a week.* Professor Michael.

14.— Laboratory work in Inorganic Preparations. *Hours to be arranged by the instructors.* Professor Michael and Dr. Bucher.

15. — Laboratory work in Organic Analysis; determination of physical constants and molecular weights; preparation of organic compounds. *Hours to be arranged by the instructors.*
Professor Michael and Dr. Bucher.

16.— Original Investigations in Chemistry. *Hours to be arranged by the instructor.* Professor Michael.

17.— Discussions on chemical subjects and recent investigations. *One hour a week.*

## BIOLOGY.

### Professor Kingsley.

The work in Biology is differentiated in two lines: one for those desiring a general knowledge of the subject, and one for those who need more thorough work. The first line embraces Biology 1, and may, upon election, be followed by subjects 4, 5, 6, and 7. The other course begins with Biology 2 and 3 and is required of all major students as well as of those candidates for the degree of S. B. in the Biology, Medical Preparatory, and General Science courses. These are followed by subjects 5 to 9, subject 8 involving the preparation of a dissertation. Instruction is given by lectures and by laboratory work, the object being to impart the scientific method rather than a large number of unimportant facts. Provision is also made for more extended study and for original investigation, and students will be encouraged to continue their work in this department by means of research on special problems.

The equipment of the department is good. There are three well-lighted laboratories furnished with every requisite for good work, including microscopes, microtomes, reagents, etc., as well as abundant material for illustration and dissection. One of the laboratories is devoted to elementary biology, one to advanced undergraduate work, and one to graduate students. There is also a department library containing 826 volumes and 1,875 pamphlets, while the college library contains the proceedings of many learned societies, both American and foreign. Besides these, proximity to Boston and Cambridge gives easy access to library facilities unequalled in any other part of America.

### SUBJECTS.

1. — General Biology. Lectures, *Tuesday and Thursday at* 11.45; laboratory work, *Tuesday and Thursday from* 2 *to* 4.

PROFESSOR KINGSLEY.

This subject is intended for those who elect their required year of science work in this department and for candidates for the degree of S. B. in chemistry.

2. — General Biology. Lectures, *Monday and Friday at* 11.45; laboratory work, *Tuesday and Thursday from* 2 *to* 4.

PROFESSOR KINGSLEY.

This course and its continuation, No. 3, are required of all students electing Biology as their major, and also of candidates for the degree of S. B. in the General Science, Biological, or Medical Preparatory course.

3. — General Biology. Lectures, *Monday and Friday at* 4; laboratory work (4 hours), *Monday, Wednesday, and Friday from* 2 *to* 4.

PROFESSOR KINGSLEY.

4. — Elementary Physiology. Lectures, demonstrations, and recitations. *Tuesday, Thursday, and Saturday at* 8.45 (*first half-year*).

PROFESSOR KINGSLEY.

The students in the Medical Preparatory course take this subject at the Medical School.

Subjects 1 to 4 will not be accepted as work for advanced degrees.

5. — Histology; a study of the normal tissues of the vertebrates, including microscopical technique. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.*

PROFESSOR KINGSLEY.

6. — Embryology. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.* Professor Kingsley.

7. — The History of Zoölogy. One lecture a week for the first half-year. Professor Kingsley.

This course of lectures, given in the evening, is open to the public, and is intended to outline the history of our knowledge of the animal kingdom, and to include the elements of the various theories connected with the organic world. Attendance on this course does not count toward a degree.

8. — Special Work. Six hours of laboratory work for the year in the investigation of some special problem. Professor Kingsley.

9. — General Morphology. Three lectures each week upon the anatomy, physiology, and embryology of selected groups, with discussion of special problems. Open only to advanced students. *Hours to be arranged.* Professor Kingsley.

Subjects 5 to 9 are intended for both graduates and undergraduates.

There is required from all students taking Laboratory Courses, a laboratory fee of $2.00 per term, payable to the Bursar of the College in advance.

## GEOLOGY.

### Professor Marshall.

The regular work in Geology is preceded by that in Mineralogy, given during the first half-year. Students must have passed in Physics 1 and Chemistry 1 before taking Geology. The instruction is given by lectures and practical work in the mineralogical laboratory, which is furnished with the apparatus needed for the qualitative determination of minerals and the quantitative analysis of the ores of the precious metals. A good collection of minerals systematically arranged in wall-cases is accessible to the student for practical use, while a much larger collection of finer specimens on exhibition in the Museum may also be consulted.

The course in Descriptive Geology given during the second half-year presupposes a knowledge of Mineralogy, and is given by means of text-books and lectures, illustrated by models, charts, maps, and drawings upon the blackboard. Soon after beginning, practical work in Lithology is taken up, by which the student becomes familiar with the constituents of the common rocks. A spectroscope, a lithological microscope, and rock-sectioning apparatus are provided for a more thorough examination of rocks and minerals. The subject of Palæontology is taken up in the latter part of the year, and illustrated by a systematic collection of fossils in the Museum. Excursions to various localities in the neighborhood are offered the students, where the more common geological phenomena can be profitably studied *in situ.*

### SUBJECTS.

1. — Mineralogy; Blow-pipe Analysis. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*). PROFESSOR MARSHALL.

2. — Geology, Lithology, and Palæontology. Lectures, recitations, and laboratory work. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*). PROFESSOR MARSHALL.

## ASTRONOMY.

1. — Recitations and Lectures, chiefly on Physical and Descriptive Astronomy, with special attention to the later discoveries, and their interpretation as bearing upon the history of the earth. *Tuesday and Thursday at* 11.45 (*first half-year*). PROFESSOR DOLBEAR.

## DRAWING.

### PROFESSOR ANTHONY.

The object of the studies pursued in this department is threefold: first, a development of the theory of technical drawing; second, the acquirement of precision and rapidity in the execution of the work; third, a practical application of these principles to the fluent expression of mechanical ideas by means of graphic language. Practice in the attainment of the first is acquired by Freehand and Geometric Drawing and the study of Descriptive Geometry. By means of progressive problems, in which nothing in the nature of a copy is permitted, the student is advanced to the consideration of point, line, and surface from a purely analytic standpoint. The instruction in Descriptive Geometry is given by means of lectures and recitations, accompanied by frequent examinations in the freehand and instrumental construction of the problems. Rapidity of work being attained only through precision, drawings are required to be executed with the greatest possible care and neatness. The theory and execution of a drawing having been mastered, together with the elements of kinematics, the student is directed to make such applications of these principles to the illustration of mechanism as shall enable him graphically to express his ideas in the most simple and direct manner. The machine drawings are made by such systems as would be required in any well-conducted drafting-room, and the most modern methods are employed in the execution of the work and in the forms of graphic expression that may be used. A progressive course in design is pursued preparatory to and in connection with thesis work.

### SUBJECTS.

1. — Descriptive Geometry. Lectures, recitations, and drawing. *Four hours a week (second half-year).*
PROFESSOR ANTHONY, MR. DANIELS.

2. — Technical Sketching and Lettering. *Two hours a week (first half-year).* PROFESSOR ANTHONY, MR. DANIELS.

3. — Mechanical Drawing. (See Engineering Courses.) *Three hours a week for the year.* MR. DANIELS.

4. — Elements of Mechanism. *Two hours a week (first half-year).*
MR. SANBORN.

5. — Machine Drawing. *Two hours a week (first half-year).*
MR. SANBORN.

6. — Kinematics. *Two hours a week (second half-year).*
PROFESSOR ANTHONY.

7. — Advanced Machine Drawing. *Two hours a week (first half-year).* PROFESSOR ANTHONY.

8. — Elements of Design. *One hour a week (second half-year).*
PROFESSOR ANTHONY.

9. — Topographical Drawing, with field work, chain, compass, level, and transit. *Three hours a week for the year.* MR. DANIELS.

10. — Machine Design. *Two hours a week for the year.*
PROFESSOR ANTHONY.

## CIVIL AND MECHANICAL ENGINEERING.

### PROFESSOR BRAY.

There are offered in this department such selected subjects from the Engineering Courses as may be profitably pursued by students in the courses in Liberal Arts, who have taken the necessary preliminary work in Mathematics, and who may desire to shape their work with reference to pursuing study in Engineering after graduation. Such students will also find subjects adapted to their plans in the departments of Mathematics, Physics, Chemistry, and Drawing. Fuller details of the work in Engineering will be found in the statement of the full Engineering Courses. For all the subjects given below, Algebra, Geometry, and Trigonometry are an indispensable preparation.

### SUBJECTS.

1. — Land Surveying. Lectures, recitations, and field practice. Plotting and calculating. *Two hours a week* (*first half-year*).
MR. DANIELS.

2. — Topography. Lectures, recitations, drawing, and field practice. *Two hours a week* (*first half-year*). MR. DANIELS.

This subject must be preceded by 1.

3. — Elementary Mechanics. *Three hours a week* (*second half-year*).
MR. SANBORN.

4. — City and Mining Surveying. Recitations, field and office work. *Three hours a week* (*second half-year*). MR. DANIELS.

5. — Railroad Surveying. Field practice and office work; drawing and calculating. *Two hours a week* (*first half-year*). MR. DANIELS.

Subjects 4 and 5 must be preceded by 1 and 2.

6. — Steam Enginery; practice in the management of engines and boilers, valve-setting, etc. *Three hours a week* (*first half-year*).
MR. SANBORN.

7. — Thermo-dynamics. *Three hours a week* (*second half-year*).
MR. SANBORN.

8. — Applied Mechanics. *Three hours a week* (*second and first half-years*). PROFESSOR BRAY.

Subjects 6, 7, and 8 must be preceded by Calculus.

9. — Applied Mechanics (laboratory). *One hour a week (first half-year).* PROFESSOR BRAY.

10. — Steam Engineering. Mechanics of the Steam Engine. Dimensions and proportions of engines and boilers; valve gears; engine testing; preparation of designs and specifications. *Three hours a week for the year.* PROFESSOR BRAY.

11. — Mechanical Laboratory. *Four hours a week (second half-year.* PROFESSOR BRAY.

This must be preceded by Mechanical Drawing and Engineering 6, 7, and 8.

12. — Roads and Railroads, to be taken with 5. *Three hours a week (first half-year); two hours a week (second half-year).*
PROFESSOR BRAY.

13. — Hydraulics. *Three hours a week (first half-year).*
PROFESSOR BRAY.

14. — Bridges and Roofs. *Two hours a week (second half-year).*
MR. DANIELS.

15. — Masonry Construction. *Three hours a week (second half-year).* PROFESSOR BRAY.

Subjects 13, 14, and 15 must be preceded by 9.

16. — Marine Engineering. PROFESSOR BRAY.

This subject is open as an elective to those students who are prepared for it and may be taken by regular students in Mechanical Engineering who wish to specialize in their Senior year. Students in Marine Engineering are required to spend their summer vacations in the engine department of a steam vessel, and on the completion of their course and one year's service in the engine department of a steam vessel, may receive United States licenses to serve as engineers on steam vessels.

## ELECTRICAL ENGINEERING.

### PROFESSOR HOOPER.

To students in the College of Liberal Arts who may desire to elect advanced work in Electricity, the following subjects are open: Subjects 1, 2, and 3 require a good working knowledge of Algebra and Trigonometry, while 4 and 5 require some acquaintance with Calculus and Differential Equations.

SUBJECTS.

1. — Dynamo Electric Machinery. Recitations and lectures. *Three hours a week (second half-year).* PROFESSOR HOOPER.

2. — Electrical Calculations. *Two hours a week (second half-year).* PROFESSOR HOOPER.

3. — Electrical Laboratory (advanced course). *Three hours a week for the year.* PROFESSOR HOOPER.

4. — Electricity (advanced work). Alternating currents. *Four hours a week (first half-year) ; three hours a week (second half-year).* PROFESSOR HOOPER.

5. — Theories of Electricity and of Magnetism. *Three hours a week for a half-year.* PROFESSOR HOOPER.

## MUSIC.

### PROFESSOR LEWIS.

The department offers opportunities to gain a knowledge of musical history and of the principles of composition, as a basis for practical work in music or in musical criticism. The courses in Harmony and in General History of Music may well be taken by students who wish to cultivate their appreciation of music, but have no intention of preparing themselves for professional work in the art.

SUBJECTS.

1. — Harmony. Lectures and practical work, based on Jadassohn's Manual of Harmony. Collateral reading concerning the lives of Bach, Händel, Haydn, Mozart, and Beethoven. *Tuesday at 3, Thursday from 2 to 4.* PROFESSOR LEWIS.

An elementary knowledge of piano playing is required of those who take this subject.

2. — Counterpoint, Simple and Double. Lectures and practical work, based on the manuals of Jadassohn, Bridge, and others. Collateral reading concerning the lives of Schubert, Schumann, Mendelssohn, and Wagner. *Three hours a week, as arranged by the instructor.* PROFESSOR LEWIS.

A thorough theoretical knowledge of harmony, and much facility in the harmonization of basses and choral melodies, are required of those who take this course. A full equivalent of Music 1 must have been done by students who wish to begin their college work with Music 2.

[3. — Fugue, Canon, Musical Form, and the Elements of Orchestration. Lectures and practical work, with various manuals for class use and reference. *Three hours a week for the year.*]

[Will be given in 1897–98.]

Students who elect this subject must have attained grade A or B in Music 2, and must have given evidence of talent in melodic invention. Those who are admitted to the course are required to attend regularly during the year the public rehearsals or concerts of the Boston Symphony Orchestra, and at least eight concerts of chamber-music, as prescribed by the instructor.

4. — General History of Music from the earliest times to the present day, with especial attention to the period since the death of Palestrina. Lectures, with various treatises for reference. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*).

PROFESSOR LEWIS.

[5. — Special studies in Musical History, in Musical Criticism, or in the development of Musical Form.]

[Will be given in 1897–98.]

An equivalent of the work of Music 4 and an ability to read with facility German and French are required of students who elect this subject. The same requirement of concert attendance as for Music 3 is made for Music 5. The course may be given in lectures, or may consist of individual work of students under the direction of the instructor.

6. — The Phenomena of Sound in their relation to music and musical instruments. Lectures and experiments. *One hour a week for the second half-year.* PROFESSOR DOLBEAR.

The first half-year's work in Physics 1 must have been done by those who elect this subject.

## PHYSICAL TRAINING.

### MR. STROUD AND MISS MOAKLER.

Regular exercise in the gymnasium is required three hours a week of all students for the two years following entrance, from the middle of November to the middle of March. The work in physical training is optional during the remaining years of the course. The aim of the department is to secure better carriage and more symmetrical development of the body, and to develop a fuller appreciation of the value of systematic exercise. The work prescribed for each student depends on the physical condition, as determined by careful medical examination, measurements, and strength tests. The special exercises of each student are directed by the instructor; the general exercises are in classes. The class work consists of free movements, exercises with wands and light dumb-bells, and on the parallel bars, vaulting-bar, and vaulting-horse. Attention is also given to running, jumping, vaulting, and other healthful athletic sports. It is the intention in all cases to make the exercises of such a character that the weakest as well as the strongest person can perform them with profit.

| | | | | |
|---|---|---|---|---|
| Tuesday, Thursday, Satur (Even number groups.) | English 4 (i, Tu. and Thurs.).<br>Oratory 1 (Tuesday, *a*).<br>German 2.<br>French 2.<br>Latin 4.<br>Political Science 1.<br>Biology 4 (i). | German 1.<br>French 1.<br>Latin 3.<br>Greek 1.<br>Political Science 2 (i).<br>Political Science 3 (ii).<br>Geology 1 (i).<br>Geology 2 (ii). | English Literature 10.<br>Italian 1.<br>Latin 1.<br>Philosophy 4 (ii).<br>Philosophy 5 (i).<br>Philosophy 6 (i).<br>Philosophy 7 (ii).<br>History 1. | German 4.<br>Greek 3.<br>Greek 4.<br>Philosophy 2 (i).<br>Philosophy 3 (ii).<br>History 8 (i).<br>Mathematics 2 (ii).<br>Biology 1 (lectures Tues. and Thurs).<br>Astronomy 1 (i, Tues. and Thurs.) |
| | X.—2.00. | XII.—3.00. | XIV.—4.00. | |
| Tuesday and Thursday Afternoons. (Even number groups.) | English 1 (Tuesday).<br>Oratory 2 (Tuesday).<br>Oratory 3 (Thursday).<br>Physics 6 (i).<br>Physics 7 (ii).<br>Chemistry 2 (i).<br>Chemistry 3 (ii).<br>Biology, 1, 2 (laboratory).<br>Music 1 (Thursday). | Chemistry 2 (i).<br>Chemistry 3 (ii).<br>Biology 1, 2 (laboratory).<br>Music 1. | Chemistry 2 (i).<br>Chemistry 3 (ii). | |

# Tabular View of Program Groups.

The arrangement of such subjects as have fixed hours assigned to them is shown in the subjoined table. Hours for laboratory work and for subjects not here indicated are to be arranged with the instructors. Subjects in the same group cannot be taken simultaneously.

The groups assigned to Monday, Wednesday, and Friday are indicated by the odd number Roman numerals; those assigned to Tuesday, Thursday, and Saturday, by the even number Roman numerals.

The small Roman numerals (i) and (ii), following the names of half subjects, indicate the half year in which they are given.

| | | | | |
|---|---|---|---|---|
| **Monday, Wednesday, Friday.** (Odd number groups.) | I.—8.45. | III.—9.45. | V.—10.45. | VII.—11.45. |
| | French 3.<br>French 4.<br>Mathematics 1 (first division). | English 3 (Monday and Friday).<br>English Literature 3 (ii).<br>English Literature 4 (ii).<br>English Literature 8 (i).<br>English Literature 9 (ii).<br>German 3.<br>Philosophy 1.<br>Mathematics 1 (second division).<br>Physics 3. | English 2.<br>English Literature 11 (Wednesday).<br>English Literature 14 (Friday).<br>Latin 5 (Wednesday and Friday).<br>Philosophy 9 (i).<br>Philosophy 10, 11, or 12 (ii).<br>Physics 1.<br>Music 4. | English 8 (i).<br>English 9 (ii).<br>French 6.<br>Latin 2.<br>Greek 1.<br>History 5.<br>Mathematics 3 (i).<br>Mathematics 5 (ii).<br>Physics 3 (ii).<br>Biology 2 (lectures Mon. and Fri.) |
| | IX.—2.00. | XI.—3.00. | XIII.—4.00. | |
| | Oratory 1 (Wednesday, *b*).<br>Greek 2.<br>Biology 3 (laboratory). | English Literature 2.<br>English Literature 7 (ii).<br>French 5.<br>Philosophy 8 (i).<br>Biology 3 (laboratory). | German 5.<br>German 7 (Monday and Friday).<br>Greek 8, or 9, or 10 (Wed. and Fri.).<br>Biology 3 (lectures Mon. and Fri.). | |
| **Tuesday, Thursday, Saturday.** (Even number groups.) | II.—8.45. | VI.—9.45. | VI.—10.45. | VIII.—11.45. |
| | English 4 (i, Tu. and Thurs.).<br>Oratory 1 (Tuesday, *a*).<br>German 2.<br>French 2.<br>Latin 4.<br>Political Science 1.<br>Biology 4 (i). | German 1.<br>French 1.<br>Latin 3.<br>Greek 1.<br>Political Science 2 (i).<br>Political Science 3 (ii).<br>Geology 1 (i).<br>Geology 2 (ii). | English Literature 10.<br>Italian 1.<br>Latin 1.<br>Philosophy 4 (ii).<br>Philosophy 5 (i).<br>Philosophy 6 (i).<br>Philosophy 7 (ii).<br>History 1. | German 4.<br>Greek 3.<br>Greek 4.<br>Philosophy 2 (i).<br>Philosophy 3 (ii).<br>History 8 (i).<br>Mathematics 2 (ii).<br>Biology 1 (lectures Tues. and Thurs).<br>Astronomy 1 (i, Tues. and Thurs.) |
| **Tuesday and Thursday Afternoons.** (Even number groups.) | X.—2.00. | XII.—3.00. | XIV.—4.00. | |
| | English 1 (Tuesday).<br>Oratory 2 (Tuesday).<br>Oratory 3 (Thursday).<br>Physics 6 (i).<br>Physics 7 (ii).<br>Chemistry 2 (i).<br>Chemistry 3 (ii).<br>Biology, 1, 2 (laboratory).<br>Music 1 (Thursday). | Chemistry 2 (i).<br>Chemistry 3 (ii).<br>Biology 1, 2 (laboratory).<br>Music 1. | Chemistry 2 (i).<br>Chemistry 3 (ii). | |

# Courses in Science.

The courses outlined below, in General Science, Biology, Chemistry, and Medical Preparatory studies, lead to the degree of Bachelor of Science, are entered through Entrance Examination Group V, and are intended for graduates of general high schools, who wish to prepare themselves for specialized scientific work. Like the engineering courses, they are placed upon a technical basis, and far less latitude is allowed the student in the choice of subjects than in the courses in Arts and Philosophy, the election being made when the course is chosen. The programs of these courses are given below. Fuller statements of the different subjects will be found under the corresponding numbers in the statements of the Departments of Instruction, pages 53 to 88.

## COURSE IN GENERAL SCIENCE.

### Freshman Year.

*English* (as in Engineering Courses).
*German* 1 or 2.
*French* 2 or 1.
*Physics* 1.
*Biology* 2.
*Drawing.*
*Physical Training.*

### Sophomore Year.

*English* (as in Engineering Courses).
*German* 2, or *German* 3 (first half-year), and *Biological German* (second half-year).
*French* 2 (if German 3 is taken).
*Biology* 3.
*Physics* 2 (first half-year) and 4 (second half-year).
*Mathematics* 1 (taken this year by those entering with French).
*Physical Training.*

### Junior Year.

*German* 3 (first half-year and *Biological German* second half-year).
*Chemistry* 1.
*Mathematics* 1 (for those entering with German).
*Descriptive Geometry* (second half-year).
*Physiology* (first half-year).
*Embryology* (second half-year).
*Shop Work* (first half-year).
*Mechanics* (second half-year).
*Elective, seven hours.*

### Senior Year.

*Chemistry* 2.
*Chemistry* 10.
*Philosophy* 2 and 3.
*Geology* 1 and 2.
*Systematic Biology* (second half-year).
*Surveying* (first half-year).
*Elective, three hours.*

## SPECIAL COURSE IN BIOLOGY.

### Freshman Year.

As in the Course in General Science.

### Sophomore Year.

*English* (as in Engineering Courses).
*German* 2, or *German* 3 (first half-year) and *Biological German* (second half-year).
*French* 2, or *elective six hours*, for those entering with French.
*Biology* 3.
*Chemistry* 1.
*Physical Training.*

### Junior Year.

*German* 3 (first half-year) and *Biological German* (second half-year).
*Physiology* (first half-year).
*Histology* (first half-year).
*Embryology* (second half-year).
*Chemistry* 2.
*Chemistry* 10.
*Elective, eight hours* (*fourteen* for those entering with German).

### Senior Year.

*Geology* 1 and 2.
*General Morphology.*
*Human Anatomy* at Tufts Medical School.
*Special research* in Biology, including *thesis*, twelve hours.
*Elective, five hours.*

## SPECIAL COURSE IN CHEMISTRY.

### Freshman Year.

*Chemistry* 1.
*Mathematics* 1.
*German* 1 or 2.
*English* (as in Engineering Courses).
*Physics* 1.
*Drawing.*
*Physical Training.*
*Elective, three hours* (first half-year).

### Sophomore Year.

*Chemistry* 2 and 3.
*Chemistry* 4.
*Chemistry* 10.
*Physics* 4.
*English* (as in Engineering Courses).
*Chemistry* 11.
*German* 2, or *French* 1.
*Physical Training.*

### Junior Year.

*Chemistry* 12.
*Chemistry* 13.
*Chemistry* 5.
*Biology* 1.
*Physiology* (first half-year).
*Chemistry* 8.
*Chemistry* 6.
*Chemistry* 14 and 15.
*Elective, three hours* (second half-year).

### Senior Year.

*Applied Chemistry* (first half-year).
*Gas Analysis* (first half-year).
*Fire Assay* (second half-year).
*Political Science* 1.

*Chemistry* 13 (continued).

*Research* and *thesis,* four hours (first half-year); ten hours (second half-year).

## MEDICAL PREPARATORY COURSE.

### Freshman Year.

As in the Course in General Science.

### Sophomore Year.

As in the Special Course in Biology.

### Junior Year.

*Chemistry* 2.

*Chemistry* 10.

*Embryology* (second half-year).

*General Morphology.*

*Philosophy* 2 and 3.

*Shop Work* (second half-year).

*German* 3 (first half-year); *Biological German* (second half-year).

*Elective, six hours* (*twelve hours* for those entering with German).

### Senior Year.

*Political Science* 1.

*Ethics.*

*Chemistry* 3.

*Human Anatomy*, *Histology*, and *Physiology* at Tufts Medical School.

*Elective, six hours.*

# Engineering Courses.

Three courses in Engineering are provided, each occupying four years, and leading to the degree of Bachelor of Science.

The course in Electrical Engineering leads to the degree of Bachelor of Science in Electrical Engineering, which is granted after the satisfactory completion of the work prescribed. The same degree in Civil or Mechanical Engineering is given on similar conditions to students who have pursued the course in Civil or Mechanical Engineering. It is believed that four years, spent mainly upon technical subjects, yet providing opportunity for such language study as will enable the student to become familiar with foreign books of scientific value, will furnish a solid foundation for advanced theoretical attainment and professional skill.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain either of the degrees mentioned above upon the completion of one year's graduate study.

Modern Languages. — An elementary knowledge of French or German (see pages 40 and 42) is required of all candidates for admission to the Engineering Department. While each student will be assigned, upon entrance, to such class as his proficiency warrants, it is in general expected that those who present merely an elementary requirement will continue through the Freshman year the study of the language presented. At the end of this period, students who have acquired the ability to utilize for research works in the language hitherto studied may begin the study of the alternate language; but no one will be permitted to begin the study of German later than the Sophomore year, except by special permission, and with the understanding that the requirement of nine term-hours on the subject is to be met by extra work.

The courses in French and German are, in general, similar to those described on pages 58 to 62 (general statement).

Students in the three branches of Engineering follow the same plan of work for the first two years.

## FRESHMAN YEAR.

### First Term.

**Mathematics.** — Advanced Algebra; Spherical Geometry; Plain Trigonometry. *Six hours a week.* MR. JORDAN.

**Mechanical Drawing** — Geometric Drawing; Orthographic Projection. *Three hours a week.* MR. DANIELS.

**Freehand Drawing.** — Lettering and Technical Sketching. *Two hours a week.* PROFESSOR ANTHONY and MR. DANIELS.

**Shop Work.** — Carpentry; Turning; Pattern-Making. *Two hours a week.* MR. C. H. CHASE.

**Rhetoric.** — Elementary Rhetoric and Composition. *Three hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Spherical Trigonometry. *Two hours a week.* MR. JORDAN.

**Mechanics.** — Lectures on Elementary Mechanics, with problems. *Three hours a week.* MR. SANBORN.

**Mechanical Drawing.** — Orthographic, Isometric, and Oblique Projection; Screw Threads; Bolts and Nuts; Tracing and Blueprinting. *Three hours a week.* MR. DANIELS.

**Descriptive Geometry.** — Lectures, recitations, and drawing. *Four hours a week.* PROFESSOR ANTHONY and MR. DANIELS.

**Shop Work.** — Pattern-Making; Moulding. *One hour a week.* MR. C. H. CHASE.

**Composition.** — *Two hours a week.* MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

## SOPHOMORE YEAR.

### First Term.

**Mathematics.** — Analytic Geometry. *Three hours a week.* MR. WREN.

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* See remarks on Modern Languages, page 93.

**Drawing.** — Machine Drawing. *Two hours a week.* MR. SANBORN.

**Elements of Mechanism.** — *Two hours a week.* MR. SANBORN.

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Chemistry.** — Inorganic Chemistry, with recitations, lectures, and laboratory work. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**Surveying.** — Recitations and lectures. Field practice; plotting and calculating. *Two hours a week.* MR. DANIELS.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.* MR. WREN.

**Drawing.** — Kinematics. *Two hours a week.* PROFESSOR ANTHONY.

**Shop Work.** — Blacksmithing; Forging of Iron and Steel. *One hour a week.* MR. C. H. CHASE.

**Physics.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Physical Laboratory.** — Mechanics; Sound, Heat, and Light. *Three hours a week.* MR. H. G. CHASE.

**Rhetoric.** — *Three hours a week.* MR. WHITTEMORE.

**Chemistry.** — General and laboratory. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**French or German.** — *Three hours a week.**

## ELECTRICAL ENGINEERING.

The aim of the course in this department is to fit men to deal intelligently with all electrical problems likely to be presented to the practical engineer. With this end in view, Mathematics and Drawing are pursued through nearly the entire course. Physics and Mechanics, both pure and applied, receive much attention, while more than half of the fourth year is devoted to the study of Electricity, by means of practical work in the electrical laboratory, together with recitations and lectures on the principles involved. The purely electrical work extends over the Junior and Senior years of the course; the Junior year being devoted to the more elementary theory and the practice of the simpler tests and measurements; the Senior year to the more advanced theory and the practice of the more complex tests and measurements.

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* See remarks on Modern Languages, page 93.

In the electrical laboratory each student is required to complete a fixed program of work. In the Junior year this consists of the work indicated in Stewart and Gee's Practical Physics, Vol. II. In the Senior year it includes among other things: the photometry of arc and incandescent lamps; the magnetic properties of the various irons; insulation and conductivity tests; efficiencies, characteristic curves, and magnetic leakage of dynamos, motors, and transformers; efficiency, capacity, etc., of accumulators; preparation of thesis.

The laboratory is well equipped with testing instruments, including the various types of ammeters, voltmeters, reflecting galvanometers, resistance boxes; standards of electromotive force, resistance, and capacity; Thomson's standard balances; electro-dynamometer, etc. The more delicate instruments are provided with substantial brick piers to prevent vibration.

The dynamo room is equipped with a Sturtevant engine of twenty-five horse-power and six dynamos, and several motors, including a pair of railway motors; and is provided with counter-shafts, dynamometers, tachometer, etc. A sixty-thousand watt hour storage battery furnishes ample power for all work at any time when the dynamos are not running.

Graduates of this course may obtain the degree of Electrical Engineer after satisfying certain conditions which are fully described in the Graduate Department statement in succeeding pages.

The plan of work for the Junior and Senior years is as follows: —

### JUNIOR YEAR.

#### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course).
*Two hours a week.* Mr. Wren.

**Drawing.** — Advanced Machine Drawing. *Three hours a week.*
PROFESSOR ANTHONY.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Three hours a week.*
MR. H. G. CHASE.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. H. G. CHASE.

**Steam Enginery.** — Practice in management of engines and boilers; adjusting parts; valve setting. *Three hours a week.*
MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.*
ASSISTANT PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Elements of Mechanism. *One hour a week.*
PROFESSOR ANTHONY.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.*
PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and Lectures. *Two hours a week.*
PROFESSOR HOOPER.

Thompson's Dynamo Electric Machinery; Dynamo Plans and Calculations. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.*
MR. C. H. CHASE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

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* See remarks on Modern Languages, page 93.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Machine Design. *Two hours a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure; Torsion; Long Columns; Arches; Special Problems. *Three hours a week.* PROFESSOR BRAY.

**Electricity.** — Alternating Currents; Bedell and Crehore, Fleming. Recitations. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Management of Electrical Machinery; testing dynamos, motors, transformers, and accumulators; testing lines, conductors, and lamps. *Three hours a week.* PROFESSOR HOOPER.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.* PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Machine Design and Thesis Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Alternating Currents, Fleming; Theory of Electricity. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Special Investigations. PROFESSOR HOOPER.

**Hydraulic Laboratory.** — Measuring discharge through orifices, pipes, and over weirs; Efficiency of Motors; Discharge in Rivers; Determination of Coefficients. PROFESSOR BRAY.

**Telegraph and Telephone.** — Lectures. *Two hours a week.* PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## MECHANICAL ENGINEERING.

It is the aim of this department to so instruct the student in the various subjects that he will be enabled to apply scientific principles to the design of a machine or to the proper arrangement of any mechanical plant. In the earlier part of his studies the work common to all engineering courses embraces the careful study of mathematics, physics, and chemistry, which have important bearing upon his subsequent study of the properties of materials used by the engineer. Elementary drawing also occupies a prominent place in the course and is followed by descriptive geometry. The latter is further developed in its application to practical problems and to the systematic study of mechanism.

Steam Enginery is taken by all engineers; it includes the study of the principles involved in the generation and application of power, the management of a steam engine and boiler, the making of steam joints, setting of valves, and so forth. The course in Thermodynamics is begun after the student has become well versed in the methods of the calculus, the principles being developed by mathematical treatment. It consists of the mechanical theory of heat, properties of gases, saturated and superheated steam, theory of the injector, and laws of the flow of steam. The subject is taught by text-book, lectures, and laboratory. Steam Engineering is taken by Seniors. It includes the study of the steam engine, compound and multiple expansion, and of steam boilers of various types; the dimensions for developing a required power; the material and sizes of parts requisite for strength and endurance; the effect and balance of reciprocating parts, and the various kinds of valve motions. Practice is given in engine and boiler testing and a design with working drawings is required of each student.

In this course students who so desire may make a special study of Marine Engineering, which includes the principles of the propelling instrument and powering of vessels. Students in Marine Engineering will spend their vacations in the engine room of a steam vessel.

Students in Mechanical Engineering pursue a very complete course of shop work in the new shops of the college, beginning with carpentry and wood turning, and followed by moulding, pattern making, blacksmithing, and machine work.

The plan for the last two years of the course in Mechanical Engineering is as follows: —

### JUNIOR YEAR.

#### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Advanced Machine Drawing. *Three hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and Lectures. *Three hours a week.* MR. H. G. CHASE.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. H. G. CHASE.

**Steam Enginery.** — Practice in Management of Engines and Boilers; Adjusting Parts; Valve Setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.**

#### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Elements of Mechanism. *One hour a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Statics; Center of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PEOFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

* See remarks on Modern Languages, page 93.

**Thermodynamics.** — Principles of Mechanical Theory of Heat. *Three hours a week.* MR. SANBORN.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.* MR. C. H. CHASE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Machine Design. *Two hours a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure; Torsion; Long Columns; Arches; Special Problems. *Three hours a week.* PROFESSOR BRAY.

**Steam Engineering.** — Mechanics of the Steam Engine; Dimensions and Proportions of Engines and Boilers; studies of different types. *Three hours a week.* PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.* PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Machine Designs and Thesis Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**Mechanical Laboratory.** — Testing Engines and Boilers; Efficiency of Machines; Power required to Drive Machines; Calibrating Instruments. PROFESSOR BRAY.

**Hydraulic Laboratory.** — Measuring Discharge through Orifices, Pipes, and over Weirs; Efficiency of Motors; Discharge in Rivers; Determination of Coefficients. PROFESSOR BRAY.

**Steam Engineering.** — Efficiency of Engines and Boilers; Design of

Engine for Given Power; Dimension of Parts; Study of Valve Gears; Specifications. *Three hours a week.* PROFESSOR BRAY.

**Telegraph and Telephone.** — Lectures. *Two hours a week.*
PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## CIVIL ENGINEERING.

The course of study in this department has been arranged with reference to its disciplinary and educational value, as well as to the general and technical knowledge which it imparts, and has constantly in view the training of competent designers and constructors. Instruction is given by means of text-books and lectures, laboratory work, and practice in the drafting-room and in the field.

In surveying, the use and adjustment of instruments are taught by work in the field, so that students become familiar with the methods of land, topographical, city, railroad, and mine surveying. The work in Plane Surveying is taken in the first term of the Sophomore year and is for all Engineers. It consists of recitations, field-work, and drafting-room practice in plotting from field notes, calculating, laying out, and dividing land. This is followed for students in this course by Topography, which embraces extended field practice with transit, stadia, level, and plane-table, and pen and colored topographical drawing, and modelling. A course of hydrographical, railroad, and city surveying follows Topography, and is designed to teach the student accuracy with rapidity in the instrumental work necessary for carrying out extended engineering enterprises. It embraces the preliminary survey, the location, and the staking out for construction.

The work in the drafting-room begins with plane geometrical problems, freehand drawing, and lettering; followed by mechanical drawing, problems in descriptive geometry, shades and shadows, plotting from field notes of actual surveys, topographical drawing and map-making. The production of finished plans is required; also the drawing of details of engineering structures and machines necessary for the construction of railroads, sewer systems, steam and electric plants.

The work in Road Engineering includes study in the class-room of the principles governing the economical location of railroads and highways, as well as consideration of the cost of their construction, maintenance, and operation. The field-work embraces the survey and location of a line of railroad, and includes setting slope-stakes, locating turnouts, culverts, and bridges, with the preparation of specifications and estimates.

In Descriptive Geometry the instruction is given by means of text-books and lectures, illustrated by diagrams and models. The problems are worked out upon the blackboard, and many original questions are added, to make the student thoroughly familiar with this branch of mathematics.

Instruction in the Steam Engine is given by means of text-books, lectures, drawings, and practice with engines and boilers. Frequent reference is made to modern examples of engines and boilers of various kinds. Students have practice in applying the steam indicator for the determination of the power developed by the engine.

In Applied Mechanics the student is taught to design structures and machines, beginning with the study of forces, centre of gravity, moment of inertia, determination of stresses in frames and trusses, including investigation of the strength and elasticity of materials, theoretically in the class-room, and experimentally in the testing laboratory. A ready knowledge of mathematics is essential in this department, since frequent use is made of analytic geometry, trigonometry, and the calculus.

The subject of Construction is taught by recitations, lectures, laboratory work, and by the study of approved examples and reports of engineers and inspectors of work under construction. Investigation is made of the characteristic properties, strength, and durability of natural and artificial building materials. The appliances and machinery required in the construction of walls, dams, piers and abutments, arches and tunnels, are considered, and the student is made familiar with the methods of constructing foundations on land and under water, and the uses of piles of various kinds.

The work in Hydraulics embraces theoretical and experimental or applied hydraulics. Numerous problems are solved by the student, requiring the application of formulæ to cases of frequent occurrence in practice. A study of the laws governing the pressure and flow of water in pipes over weirs, through tubes, etc., is followed by numerous problems, requiring, on the part of the students, the application of formulæ to cases of frequent occurrence in practice. The student is taught the use of instruments in measuring the flow in rivers, and has laboratory practice with weirs, tanks, orifices, etc., and in measuring efficiency of hydraulic motors. A study is made of the published reports of engineers upon the experimental determination of the flow in conduits and sewers.

The instruction in Bridge Designing is based upon the analytic and graphic computation of stresses, as taken up in Applied Mechanics. The principles therein developed through the study of the strength and elasticity of materials are applied to computation for determining the several parts of highway and railroad bridges.

Students in Civil Engineering are required to take workshop practice in carpentry, wood turning, pattern making, moulding, and blacksmithing.

Graduates of this course may obtain the degree of Civil Engineer on complying with the requirements defined in the statement of the Graduate Department. The plan of the last two years of the course is as follows : —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Topography.** — Topographical Surveying; Pen and Colored Topographical Drawing. Field and office work. *Two hours a week.* MR. DANIELS.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Two hours a week.* MR. H. G. CHASE.

**Electrical Laboratory.**— Magnetic and Electrical Measurements. *Two hours a week.* MR. H. G. CHASE.

**Steam Enginery.** — Practice and Management of Engines and Boilers; Adjusting Parts; Valve Setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moment of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Masonry Construction.** — Preparation and Use of Materials; Foundations; Dams; Walls; Abutments; Arches. *Three hours a week.* PROFESSOR BRAY.

**Surveying.** — City and Mining Surveying. Text-Book with field practice and office work. *Three hours a week.* MR. DANIELS.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.* PROFESSOR BROWN.

**Applied Mechanics.** — Strength of Materials; Flexure, Torsion; Long Columns, Arches; Special Problems. *Three hours a week.* PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over

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* See remarks on Modern Languages, page 93.

Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.* PROFESSOR BRAY.

**Roads and Railroads.** — Laying-out, Construction, and Maintenance of Highways. Method of Conducting Preliminary Survey and Trial Location for a Railroad. *Three hours a week.* PROFESSOR BRAY.

**Surveying.** — Practice in Railroad Surveying; Locating Curves, Switches, and Frogs; Laying out Mechanical Structures; Staking out for Construction. *Two hours a week.* MR. DANIELS.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

**English Composition.** — *One hour a week.* MR. WHITTEMORE.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Hydraulic Laboratory.** — Measuring Discharges through Orifices, Pipes, and over Weirs; Efficiency of Motors; Discharge in Rivers; Determination of Coefficients. PROFESSOR BRAY.

**Railroads.** — Economic Theory of Railroad Location. *Two hours a week.* PROFESSOR BRAY.

**Bridges and Roofs.** — Theory and Practice of Designing. *Two hours a week.* MR. DANIELS.

**Telegraph and Telephone.** — Lectures. *Two hours a week.* PROFESSOR DOLBEAR.

**Preparation of Thesis.**

# TABULAR VIEW OF ENGINEERING COURSES.

## FRESHMAN YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per Week. | Must be preceded by |
|---|---|---|---|
| | FIRST TERM. | | |
| 1 | Mathematics | 6 | — |
| 2 | Mechanical Drawing | 3 | — |
| 3 | Freehand Drawing | 2 | — |
| 4 | Carpentry and Turning | 2 | — |
| 5 | French or German | 3 | — |
| 6 | Rhetoric | 3 | — |
| | SECOND TERM. | | |
| 7 | Mathematics | 2 | 1 |
| 8 | Mechanical Drawing | 3 | 2 |
| 9 | Descriptive Geometry | 4 | 1, 2 |
| 10 | Moulding and Pattern Making | 1 | 4 |
| 11 | French or German | 3 | 5 |
| 12 | Rhetoric | 2 | 6 |
| 13 | Mechanics | 3 | 7* |

* May be taken at the same time, but cannot be taken before 7.

## SOPHOMORE YEAR.

| | | | |
|---|---|---|---|
| | FIRST TERM. | | |
| 14 | Analytical Geometry | 3 | 7 |
| 15 | Elements of Mechanism | 2 | 8, 9 |
| 16 | Machine Drawing | 2 | 8, 3 |
| 18 | French or German | 3 | 11 |
| 19 | Physics | 3 | 13 |
| 20 | Chemistry, General and Laboratory | 3 | — |
| 21 | Surveying | 2 | 7 |
| | SECOND TERM. | | |
| 22 | Calculus | 3 | 14 |
| 23 | Drawing | 2 | 15, 16 |
| 24 | Forging | 2 | — |
| 25 | French or German | 3 | 18 |
| 26 | Rhetoric | 3 | 12 |
| 27 | Physics, Lectures | 3 | 19 |
| 28 | Physics, Laboratory | 3 | 19 |
| 29 | Chemistry, General and Laboratory | 3 | 20 |

## JUNIOR YEAR.

| No. of Subject. | SUBJECT. | No. of exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 30 | Calculus | 3 | E. M. C. | 22 | — |
| 31 | Drawing, Machine | 2 | E. M. | 23 | — |
| 32 | Topography | 2 | C. | 21 | — |
| 33 | French or German | 3 | E. M. C. | 25 | — |
| 34 | Electricity, Recitations | 3 | E. M. C. | 14, 27, 28 | — |
| 35 | Electricity, Laboratory | 2 | E. M. C. | 14, 27, 28 | — |
| 36 | Steam Enginery | 3 | E. M. C. | 27 | — |
| 37 | Qualitative Analysis | 3 | E. M. C. | 29 | — |
| 38 | English Literature | 1 | E. M. C. | — | — |
| | SECOND TERM. | | | | |
| 39 | Calculus | 2 | E. M. C. | 30 | — |
| 40 | Vise, and Machine Work | 2 | E. M. | — | — |
| 41 | Applied Mechanics, Recitations | 3 | E. M. C. | 30 | 39, 42 |
| 42 | Applied Mechanics, Laboratory | 1 | E. M. C. | — | 41 |
| 43 | Electricity, Recitations | 2 | E. M. | 34, 35 | — |
| 44 | Dynamo Electric Machinery | 3 | E. | 14, 27 | — |
| 45 | Physical Laboratory | 2 | E. M. C. | 34, 35 | 43 |
| 46 | Thermo-Dynamics | 3 | M. | 30, 36 | 39 |
| 47 | English Literature | 1 | E. M. C. | 38 | — |
| 48 | Masonry Construction | 3 | C. | 39, 41 | 39, 41 |
| 49 | Surveying | 3 | C. | 32 | — |
| | Drawing — Design | 1 | E. M. | 31 | — |

* E.— Electrical. M.— Mechanical. C.— Civil.

## SENIOR YEAR.

| No. of Subject. | SUBJECT. | No. of Exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 50 | Differential Equations | 2 | E. M. C. | 39 | — |
| 51 | Drawing — Design | 2 | E. M. C. | 31, 41 | — |
| 52 | Applied Mechanics | 3 | E. M. C. | 41, 42 | — |
| 53 | Electricity, Recitations | 4 | E. | 43, 45 | 50 |
| 54 | Electricity, Laboratory | 3 | E. | 43, 44, 45 | 53 |
| 55 | Steam Engineering | 3 | M. | 31, 36, 39, 46 | 52 |
| 56 | Political Economy | 3 | E. M. C. | — | — |
| 57 | Hydraulics | 3 | E. M. C. | — | 52 |
| 58 | Roads and Railroads | 3 | C. | 48 | 60 |
| 59 | English Composition | 1 | E. M. C. | 26 | — |
| 60 | Surveying | 2 | C. | 32 | 58 |
| | SECOND TERM. | | | | |
| 61 | Least Squares | 2 | E. M. C. | 30 | — |
| 62 | Drawing — Design | 2 | E. M. C. | 51 | — |
| 63 | Electricity | 3 | E. | 53 | — |
| 64 | Laboratory, Electrical | 4 | E. | 54 | 63 |
| 65 | Laboratory, Mechanical | 4 | M. | — | 68 |
| 66 | Laboratory, Hydraulic | — | E. M. C. | 57 | — |
| 67 | Telegraph and Telephone | 2 | E. M. C. | 27 | — |
| 68 | Steam Engineering | 3 | M. | 55 | — |
| 69 | Railroads | 2 | C. | 39, 52, 58 | — |
| 70 | Bridges and Roofs | 2 | C. | 52 | — |
| 71 | Thesis | — | E. M. C. | — | — |

* E.— Electrical. M.— Mechanical. C.— Civil.

# Buildings and Equipment.

## BUILDINGS.

The college buildings are fourteen in number: Ballou Hall, containing recitation rooms and the physical laboratory; Barnum Museum, containing the natural history collections and the biological and geological laboratories and lecture room; Goddard Chapel; Goddard Gymnasium; the Library; the Chemical Building, containing the chemical laboratories and lecture room; three dormitories, — East Hall, West Hall, Dean Hall; the Commons Building, containing the commons dining-hall, the post-office, and rooms for students; and Metcalf Hall, for women students. The Bromfield-Pearson school building is available for the technical courses of the College. Two buildings, Miner Hall and Paige Hall, are devoted to the use of the Divinity School.

## LIBRARY.

The Library contains thirty-five thousand bound volumes, and about sixteen thousand pamphlets. It includes, in a separate room, the private library (numbering fourteen hundred and forty volumes) of the late Rev. William H. Ryder, D. D., of Chicago. It has a very full collection of English works relating to music, and in addition to its general collection in American history, the valuable collection in this field of the late Richard Frothingham. The College regularly receives over two hundred periodicals. In the Library building a reading-room, maintained by the students, supplies the daily and weekly papers. Provision for the purchase of books is chiefly from the income of the Joy Library Fund, now amounting to twenty thousand dollars. The average annual increase by donation and purchase, for the last five years, has been about twelve hundred volumes. The Library is open to all members of the College every day in the week, except Sunday, from 8.45 A. M. to 12.45 P. M., and from 2 to 5 P. M.

In addition to the general library, there is in Miner Hall the collection of the Universalist Historical Society (thirty-five hundred volumes and several thousand pamphlets), to which, on application, students have free access; and in the Barnum Museum the department library of Natural History, numbering eight hundred and twenty-six volumes and eighteen hundred and seventy-five pamphlets.

## BARNUM MUSEUM.

The Barnum Museum of Natural History was built in 1883–84 by the late Phineas T. Barnum, who also gave the College a fund for its maintenance, and later, by bequest, gave funds for the erection of two wings to the central building. One of these wings has just been erected. In addition to laboratory rooms, it affords space for the display of the mineralogical and geological collections.

The College is also indebted to Mr. Barnum for the larger portion of its zoölogical collection. This serves to illustrate all groups of the animal kingdom and is especially rich in skeletons and mounted skins of mammals. Besides the more common forms, it contains many rare and interesting species, as Hatteria, Polypterus, Ceratodus, Protopterus, Cestracion, Amphioxus, Peripatus, and Pentacrinus, the whole being well adapted for the purposes of instruction. During recent years a large series of skeletons of the lower vertebrates, as well as numbers of the Naples Station Invertebrates, have been placed on exhibition.

The botanical collection consists of an herbarium containing a representation of the flora of New England, besides many specimens from Europe and the southern and western states. The geological collection contains representatives of the various types of rocks, as well as of fossils from all formations. Especially interesting are the nearly perfect skeletons of Ichthyosaurus and Plesiosaurus. The mineralogical collection, which has been assembled with great care, contains most of the species in very fine examples. Among those at present displayed are collections illustrating the chemical and physical properties of minerals.

The laboratories and lecture rooms of the department of Geology are in the main Museum building. The geological laboratory is provided with petrological microscopes, instruments for making rock sections, and other instruments; the mineralogical laboratory possesses the apparatus necessary for the determination of minerals, the analysis of ores, and assay work; the biological laboratories are in the newly-erected wing. The laboratory for elementary work is equipped with all necessary facilities, while the laboratories (two in number) for advanced and research work have all the necessary appliances and reagents for investigation in the lines of Anatomy, Histology, and Embryology.

The department library of Natural History, recently established in the Barnum Museum, contains those publications which bear directly upon the work of the department. It already embraces over eight hundred volumes and nearly nineteen hundred pamphlets. Its future increase is in part provided for by the publications received in exchange for the "TUFTS COLLEGE STUDIES." Most of the series of periodicals are complete since 1870.

## GODDARD GYMNASIUM.

The Goddard Gymnasium is the gift of Mrs. Mary T. Goddard, and comprises, besides the main room for individual and class exercise, dressing-rooms, tub-baths, shower-baths, and lockers. The floor space unoccupied by apparatus is sufficient to accommodate a class of sixty men. The apparatus embraces that usually found in a well-equipped gymnasium, including fourteen Sargent developing machines, a large wrestling mat, and facilities for basket ball. A running-track, one thirty-second of a mile in length, extends around the room. A full set of anthropometric instruments admits the accurate measurement of each student as preliminary to the assignment of suitable exercise.

## PHYSICAL LABORATORY.

The Physical Laboratory contains apparatus sufficient for illustrating all the general principles of Physics. The equipment includes a dividing engine, chronograph, cathetometer, sextant, microscope, saccharimeter, polariscope, spectroscope, spectrometer, optical bench, Rowland's gratings, and charts of the solar spectrum; also apparatus for projection with sunlight, lime, and electric lights. In the field of electricity the equipment is especially good, including standards of resistance, of capacity, and of electro-motive force, besides a variety of instruments for accurate measurement.

## ELECTRICAL LABORATORY.

The Electrical Laboratory is supplied with the apparatus needed for testing and experimental purposes; among which may be mentioned ammeters, voltmeters, Wheatstone bridges, reflecting galvanometers, an electrometer, Sir William Thomson's standard balances, condensers, a large induction coil, and, in process of construction, an electro-dynamometer with coils a meter in diameter.

The dynamo-room contains a B. F. Sturtevant high-speed automatic engine of about twenty-five horse-power, belted to a line of shafting, the driven pulley being connected to the shafting through an Emerson power-scale reading to forty horse-power. From this shafting are belted an American and a Ball arc-light dynamo, a 12 kilo-watt polyphase generator, a 15 kilo-watt 110 volt generator, and a pair of 110 volt 1,500 watt machines for the Library three-wire installation. Connected with the engine by a clutch is a 15 kilo-watt Mordey alternator. There are also a pair of railway motors and several small motors for testing purposes and for power. Steam power is furnished by a Whittier boiler.

Belonging to the dynamo-room are over twenty arc-lamps and a supply of electrical testing instruments. Adjacent is the battery-room, the main battery consisting of sixty of the large cells of the American Accumulator Company. These cells are in constant use for experimental and motor work, and for lighting.

## CHEMICAL BUILDING.

The building of the department of Chemistry contains laboratories for General Inorganic, Organic, Analytical, and Metallurgical Chemistry, a large lecture room, library, and weighing room, and the private laboratories of the Professor in charge. The rooms are provided with all the modern laboratory conveniences and are well equipped with apparatus and chemicals.

## BROMFIELD-PEARSON BUILDING.

The Bromfield-Pearson building is provided with shops and drafting-rooms equipped for the instruction of classes in the Engineering courses in Carpentry, Pattern-making, Forging, Foundry and Machine Work, and Drawing. The equipment includes a forge shop and foundry, provided with the necessary forges and tools for a class of eighteen; pattern and machine shops, also equipped for classes of eighteen, each member being provided with a lathe, bench, and necessary tools. The drafting rooms are in the third story and separated from the noise and vibration of the shops. Abundant and uniform light is provided by means of large skylights on the northerly side.

## THE HALLS.

The Halls for the accommodation of students in the College of Letters are five in number. East, West, and Dean Halls, and the Commons Building, for men, are arranged with spacious and convenient rooms, in suites, are warmed by steam, lighted by gas, and have good modern plumbing. Metcalf Hall for women students is a gift to the College by Mr. Albert Metcalf, of Newton. It is built of buff brick and gray limestone, of simple and dignified architecture, and is equipped with every convenience. In the basement is a gymnasium, with bath-rooms connected. The first floor contains the rooms of the matron, a reception-room, cloak-room, reading-room, and dining-room. The second and third floors have pleasant rooms for students, with ample bath and toilet conveniences on each floor. In the wing is the kitchen on the first floor, and servants' rooms on the second. Every safeguard for health and against fire is provided.

# General Information.

## RELIGIOUS OBSERVANCES.

Goddard Chapel, erected in 1882–83, is the gift of Mrs. Mary T. Goddard as a memorial of her husband, the late Thomas A. Goddard. Morning prayers are held daily, at which attendance is required. The care of the pulpit on Sundays devolves upon the President of the College; but variety and interest are given to the preaching services by frequent exchanges with neighboring clergymen. Attendance upon Sunday services is required; but permission is freely given to those who desire to attend elsewhere.

The RUSSELL LECTURE, established in accordance with a bequest of the late James Russell, of Arlington, is delivered before the Trustees, Faculty, and students, on the first Sunday of the college year, by either a clergyman or a layman, on a subject prescribed by the testator. The lecture will be delivered in 1897 by the Rev. W. S. Perkins, D. D., of Meriden, Connecticut.

## TUFTS COLLEGE STUDIES.

This publication has been established as a means of presenting to the world the results of original work done in the different departments of the College. The numbers, which will be issued as material is ready, will be distributed to educational institutions and learned societies. The College desires to establish regular exchanges of these Studies with all publishing institutions at home and abroad. Correspondence regarding such exchanges should be addressed to the Librarian of Tufts College.

Three numbers have been issued, containing the following papers: "The Anterior Cranial Nerves of Pipa," by G. A. Arnold; "Ectodermic Origin of the Cartilages of the Head," by Julia B. Platt; "The Classification of the Arthropoda," by J. S. Kingsley; "Development of the Lungs of Spiders," by O. L. Simmons; "Development of the Wing in Sterna Wilsoni," by V. L. Leighton; "The Morphology and Classification of the Pauropoda, with Notes on the Morphology of the Diplopoda," by Frederick C. Kenyon.

The editorial board of Tufts College Studies, for the year 1896, is made up of the President of the College, and Professors Knight, Dolbear, and Kingsley.

## ADMISSION AND REGISTRATION.

The first examinations for admission to the College of Letters are held on the three days immediately following the annual Commencement in June, and the second examinations on three successive days in September, the last being the opening day of the college year. The program of the examinations may be found in the College Calendar, on pages 4 and 5. Students entering on examination are required to register at the office of the Registrar before taking their examinations. Those entering on certificate are required to register before noon of the opening day of the college year. They should file the papers of certification, on the proper blanks (to be obtained of the Registrar of the College) at least one month before the opening of the college year. This is necessary for a thorough examination by the Faculty of the statements submitted, and any one who does not comply with the full requirements relating to certificates may be required to take the examinations as a condition of admission to the College.

Every student who has been a resident one year or more at the College is required to file a plan of study, properly approved, at the office of the Registrar before noon of the opening day of the college year, two copies being made on blanks furnished for the purpose, one to be kept on file by the Registrar, the other for the use of his major instructor. A registration fee of two dollars will be charged to every student not registering in person on the morning of the opening day. Hours for consultation of students with instructors will be publicly announced. No petitions concerning the courses of students in regular standing, except such as may be made in appeal from the decisions of major instructors, will be brought up for action by the Faculty; but all petitions relating to special courses and all appeals from decisions of major instructors must be before the Faculty at the first meeting of the term. The Committee on Freshman Plans of Study will be in session for consultation from two to five o'clock in the afternoon of the second day of the fall examinations. All classes will meet their instructors on Friday, the second day of the college year, according to a schedule which will be duly posted.

The morning of Saturday, the last day of the first half-year, will be given to registration of plans of study for the second half-year and consultation in regard to the work of the term.

PROMOTIONS.— Students in the courses leading to the degrees of A. B. or Ph. B. are registered as Sophomores when they have twenty-six term hours to their credit; as Juniors when credited with fifty-eight term hours; and as Seniors when credited with ninety term hours.

Students in the Engineering Courses fail of promotion if they have deficiencies amounting to six term hours in the prescribed work of the year. The Engineering Committee will be in session from nine to twelve o'clock in the forenoon of the second day of the fall examinations to consider the programs of such students in Engineering as have six or more term hours of conditions, or have failed to fulfil requirements imposed at the close of the previous year.

ADMISSION FROM OTHER COLLEGES.— Students entering Tufts College after pursuing study in any other college of equal rank are credited with the number of hours' work actually done towards the requirements of Tufts College, as certified by the proper authorities of the college from which the student comes. Such students must present satisfactory certificates showing the amount and character of work already accomplished, in order to obtain credit on the course of this College.

The Registrar's office hours during the summer vacation will be from two to five o'clock on Tuesday, Wednesday, Thursday, and Saturday afternoons.

## SPECIAL STUDENTS.

Students wishing to pursue a special course of study, who are not candidates for a degree, are subject to the following regulations: —

1. Every special student shall choose a major department, and shall make up a plan of study under the direction and subject to the approval of the major instructor.
2. The student shall satisfy the instructor in each subject included in the approved plan of study that he is able to pursue the work.
3. Every special student having less than fifteen program hours a week will be required to obtain seventy per cent in each subject; but those whose program hours number fifteen or more will be treated in the same manner as regular students.
4. A special student, on leaving college, shall be entitled to a certificate giving the per cent attained in each course pursued, and signed by the President and Registrar.
5. Special students in Electrical Engineering are required to pass examinations in General Physics, Trigonometry, and Elementary Calculus.

## TERMS AND VACATIONS.

The college year begins on the third Thursday in September, and ends at Commencement, the third Wednesday in June. The year is divided into two terms of eighteen weeks each. There are no college exercises during a recess of three days at Thanksgiving, two weeks at Christmas, and one week beginning on the Saturday before the first Thursday in April.

## EXPENSES.

The charge for instruction is *one hundred dollars* a year. Engineering students are charged *twenty dollars* a year extra.

Students in the chemical laboratories are charged for breakage, and *four dollars* a term for materials used. A fee of *two dollars* a term, payable in advance, is required of all students taking laboratory work in Biology. Students other than engineering who take shop work are charged extra.

The college halls will accommodate two hundred and fifty men. Half-room rent, including heat, ranges from sixteen to eighty-five dollars. Metcalf Hall will accommodate twenty-four women. Students furnish their own rooms. A charge of *ten dollars* a year for the care of rooms is made to all persons rooming in any of the college buildings, except Paige Hall. Any damage done by students to college property is charged in the term bills.

Rooms in the college halls will be open for the occupancy of students on and after the Wednesday of the week preceding the opening of the college year.

Students not having a college residence will be charged *ten dollars* a year for rooms occupied between recitation hours.

Every student who enters the College of Letters is required to deposit with the Bursar of the College either a bond with two satisfactory sureties for the sum of *two hundred dollars*, or the sum of *one hundred dollars* in cash, which sum, with interest at the rate of four per cent yearly, will be returned when the student leaves the College, his term bills first being paid in full. No officer or student of the College will be accepted as a bondsman.

The charges for each year are contained in two bills, of which the first is made at the middle of the year, and is payable on the first day of March; the second is made immediately after Commencement, and is payable on the first day of the following college year; but the second bill of the Senior year must be settled by the Saturday before Commencement, or graduation will not be permitted.

All college charges are payable to the Bursar, and all arrangements with regard to rooms are to be made with him. The Bursar's office is in the Library Building, his office hours during the college year being on Tuesday from 8.45 to 11.45 in the morning, and on Friday from 8.45 to 12 in the morning, and from 2 to 4 in the afternoon.

Students board in commons at $3.75 per week; in private families at $3.50 to $5.00 for table board. Other expenses vary with the economy of each student.

The following estimates represent the fixed annual expenses: —

| | | |
|---|---|---|
| Tuition . . . . . . . . . . . . . | $100.00 | $100.00 |
| Physical culture, including gymnasium and grounds . . . . . . . . | 10.00 | 10.00 |
| Reading room . . . . . . . . . . | 1.00 | 1.00 |
| Half-room rent . . . . . . . . . . | 16.00 | 85.00 |
| Care of rooms . . . . . . . . . . | 10.00 | 10.00 |
| Board, $3.50 to $5.00 a week (36 weeks), | 126.00 | 180.00 |
| Total . . . . . . . . . | $263.00 | $386.00 |

## SCHOLARSHIPS.

Awards of scholarships are made by the Board of Trustees on the recommendation of the Faculty. The obtaining of a scholarship for one year does not constitute any title to a second nomination.

Applications for scholarships must be filed with the Bursar, on blanks furnished for the purpose, on or before the tenth day of October; and, if the applicant be a minor, must be sanctioned by his parent or guardian. Scholarships will be granted, in general, only to students actually in need of such aid. No one need apply who has not made satisfactory progress, or who has come under any grave censure in the course of the year.

*Scholarships are available for those students only whose term bills are fully paid within ten days after the opening of each college term or after such bills shall have become due. The bills of any student whose connection with the College ceases are due at that time. The term bills of members of the graduating class are payable on the Saturday preceding Commencement Day.*

No scholarship is available to any student who is not a resident of a college dormitory, unless excused in writing from such residence by the authority of the executive committee of the Board of Trustees.

The following scholarships, the yearly income of which is one hundred dollars each, are awarded annually by the Trustees, but except in special cases, when the donor has otherwise stipulated, the Trustees will award scholarships in the sum of fifty dollars each.

THREE STATE SCHOLARSHIPS,— Established in accordance with a resolve of the Commonwealth.

FIVE HOWLAND SCHOLARSHIPS,— Established from the income of the bequest of the late Edwin Howland, of South Africa.

FIVE WALKER MATHEMATICAL SCHOLARSHIPS,— Established in honor of the late William J. Walker, M. D., of Newport, R. I., and payable from the income of the Walker Fund.

TWO MOSES DAY SCHOLARSHIPS,— Founded by the late Moses Day, of Roxbury.

THE A. A. MINER SCHOLARSHIP,— Founded by the late A. A. Miner, D. D., of Boston.

THE REBECCA T. ROBINSON SCHOLARSHIP,— Founded by the late Charles Robinson, LL. D., of Newton.

THE WILLIAM OSCAR CORNELL SCHOLARSHIP,— Founded by William Oscar Cornell, of Providence, R. I.

THE ARA CUSHMAN SCHOLARSHIP,— Founded by Ara Cushman, of Auburn, Me.

THE LAURA A. SCOTT SCHOLARSHIP,— Founded by Mrs. Laura A. Scott, of Ridgefield, Conn.

THE STOW SCHOLARSHIP,— Founded by Mrs. Eugenia D. Stow, of Meriden, Conn.

THE NORCROSS SCHOLARSHIP,— Founded by James A. and Mrs. Mary E. Norcross, of Worcester.

THE ANDERSON SCHOLARSHIP,— Founded by John M. Anderson, of Salem, in the name of John M. and Rebecca Anderson.

THE TRAVELLI SCHOLARSHIP,— Founded by Mrs. Emily R. Travelli, of Newton.

THE WHITTIER SCHOLARSHIP,— Founded by Charles Whittier, of Roxbury, in the name of Charles and Eliza Isabel Whittier.

THE TALBOT SCHOLARSHIP,— Founded by Newton Talbot, of Boston.

THE SIMONS MEMORIAL SCHOLARSHIP,— Founded by Mrs. Mary A. Simons, of Manchester, N. H., in memory of Hiram, H. Augustus, and Frank Simons.

THE AMASA AND HANNAH L. WHITING SCHOLARSHIP,— Founded by Mrs. Hannah L. Whiting, of Hingham.

THE MARTHA GOLDTHWAITE MEMORIAL SCHOLARSHIP,— Founded by Willard Goldthwaite, of Salem.

THE ANDREW J. CLARK MEMORIAL SCHOLARSHIP,— Founded by Mrs. Abbie B. Clark, of Orange.

THE SARAH E. SAYLES MEMORIAL SCHOLARSHIP,— Founded by Albert W. Sayles, of Lowell.

THE COUSENS SCHOLARSHIP,— Founded by John E. Cousens, of Brookline, in the name of John E. and Sarah C. Cousens.

THE BENJAMIN F. SPINNEY SCHOLARSHIP,— Founded by Benjamin F. Spinney, of Lynn.

THE HENRY F. BARROWS SCHOLARSHIP,— Founded by Henry F. Barrows, of North Attleboro.

THE ELLERY E. PECK MEMORIAL SCHOLARSHIP,— Founded by Henry Rollins, of Bangor, Me. The income of this scholarship is not at present available.

THE J. H. MORLEY MEMORIAL SCHOLARSHIP,— Founded by Herbert Morley Small, of Baldwinville.

THE EDWIN H. CHAPIN MEMORIAL SCHOLARSHIP,— Founded by friends of the late E. H. Chapin, D. D., in New York City.

THE THOMAS A. GODDARD MEMORIAL SCHOLARSHIP,— Founded by Mrs. Mary T. Goddard, of Newton.

THE HOSEA BALLOU, 2D, MEMORIAL SCHOLARSHIP,— Founded by Mrs. Mary T. Goddard, of Newton.

THE HENRY E. COBB SCHOLARSHIP,— Founded by the late Henry E. Cobb, of Boston.

THE MARY ANN WARD SCHOLARSHIP,— Founded by Sylvester L. Ward, of Boston.

THE MARIA P. WINN SCHOLARSHIP,— Established from a bequest of the late Mrs. Maria P. Winn, of Woburn.

THE JOSEPH D. PEIRCE MEMORIAL SCHOLARSHIP,— Founded by the children and other relatives of the late J. D. Peirce, D. D., of Attleboro.

THE SCHOLARSHIP OF THE CLASS OF 1857,— Founded by Heman Allen Dearborn, for the benefit of women students. This scholarship is not available the present year.

TWO JOHN AND LUCY H. STOWE SCHOLARSHIPS,— Two scholarships of one hundred dollars each for women students, founded by Mrs. Lucy H. Stowe, of Lawrence, Mass.

TWO SIMMONS SCHOLARSHIPS,— Founded by the will of Robert F. Simmons, of Attleboro, in the names of Mary F. and Robert F. Simmons.

THE JOSHUA S. AND HARRIET N. WHITE SCHOLARSHIP,—Founded by the late Joshua S. White, of Pawtucket, R. I.

THE JOHN B. PERKINS SCHOLARSHIP,— Founded by Ann Maria Perkins, of Medford, Mass.

The following scholarships of fifty dollars each are awarded annually: —

THE A. A. MINER SCHOLARSHIP,— Founded by A. A. Miner, D. D., of Boston.

THE PERKINS SCHOLARSHIP,— Founded by James D. Perkins, of Brooklyn, N. Y.

THE MOSES DAY SCHOLARSHIP,— Founded by the late Moses Day, of Roxbury.

THE JOHN AND LUCY H. STOWE SCHOLARSHIP,— Founded by Mrs. Lucy H. Stowe, of Lawrence, for the benefit of women students.

The following scholarships are awarded under special conditions: —

THE GREENWOOD PRIZE SCHOLARSHIP IN ORATORY,— Founded by the late Mrs. Eliza M. Greenwood, of Malden, and given to such student as shall have made, as the result of faithful work, together with a fair degree of attainment, the greatest improvement in Oratory.

THE WENDELL PHILLIPS MEMORIAL SCHOLARSHIP,— Founded to perpetuate the name, fame, and influence of Wendell Phillips. This scholarship is to be awarded to a student who has completed the Freshman and Sophomore years of his course, and he is to have the benefit of it during the remainder of his course. The beneficiary must be of sound body, high character, and ability in declamation and debate, and must comply with certain special conditions, including participation in a competitive debate of the applicants at the end of the Sophomore year. The specific conditions governing the award of this scholarship may be obtained by those intending to apply therefor of the Secretary of the Faculty, to whom application should be made early in the Sophomore year.

LOAN FUND FOR WOMEN.— The Woman's Universalist Missionary Society of Massachusetts maintains a fund which is loaned to deserving women students, in sums of one hundred dollars, at four per cent. This fund now amounts to about two thousand dollars.

APPOINTMENTS.— The pay of a monitor is *fifteen dollars* a year; that of the bell-ringer and the organist, *one hundred and fifty dollars* each.

## PRIZES.

GODDARD PRIZES.— In the second term of the academical year three prizes of *fifteen dollars* each are assigned from the Goddard Prize Fund, as follows: —

A prize for the best examination in Plato's Symposium, or the Agamemnon of Æschylus, including an account of the author and his works.

A prize for the best Latin prose translation, by a member of the class pursuing Latin 2, of the fifth, sixth, and seventh sections of Chapter LV in Liddell's History of Rome.

A prize for the best examination in the Mathematics of the first year.

The translations must be left at the President's office by the first day of May, in sealed envelopes, accompanied by sealed letters containing the authors' names.

RHETORICAL PRIZES.— Six prizes are awarded, as follows: —

Two prizes, of *twenty* and *ten dollars* respectively, to the best readers among students who have taken six term hours in Oratory.

Two prizes, of *twenty* and *ten dollars* respectively, to students who have taken four term hours in Oratory, for the best exhibition of improvement and skill in elocution.

Two prizes, of *twenty* and *ten dollars* respectively, on the same conditions, to students who have taken two term hours in Oratory.

The rhetorical prizes are awarded by a committee, chosen by the Faculty, who judge the work presented by the competitors upon the public day appointed for that purpose. In order to enter the public competition, candidates, as well as their selections, must be approved by the Professor of Oratory.

ENTRANCE EXAMINATION PRIZES.— Two prizes, of *thirty* and *twenty dollars* respectively, are awarded for the best entrance examinations. No one will be considered a candidate for such prize unless he has passed at the regular examinations in all the subjects required for admission to the College, and has been admitted without conditions. These prizes are payable at the end of the first term in College.

The foregoing prizes are not awarded unless, in the opinion of the respective judges, there is sufficient merit in the several contests to warrant their distribution.

## HONORS AND DEGREES.

Final Honors will be conferred at Commencement upon any member of the graduating class in the Courses in Liberal Arts who shall have attained Grade A (at least eighty-seven per cent) in a major department, and Grade B (at least seventy-five per cent) in the collateral subjects.

Final Honors will be conferred at Commencement upon any member of the graduating class in the Engineering Courses who shall have complied with the following conditions: —

In the two years immediately preceding graduation,—

1. He must have attained Grade A (over eighty-seven per cent) in the equivalent of six hours a week for a year in the subject in which he desires honors.
2. He must also have attained Grade A in extra work in this or a cognate subject equivalent to three hours a week for a year.
3. He must have attained Grade B (over seventy-five per cent) in the average of all his studies during this period.

The following subject in the Engineering Courses is open for honors,— Electricity.

Honorable Mention will be made in the Commencement program and in the Annual Catalogue of a student who has attained Grade A or B in a department to which, during the two years preceding, he has given the equivalent of not less than six hours a week for a year.

The Degree of Bachelor of Arts will be conferred at Commencement by the Trustees, on recommendation of the Faculty, upon students who shall have complied in a satisfactory manner with the conditions stated on page 49 to 51.

THE DEGREE OF BACHELOR OF PHILOSOPHY will be conferred upon students who shall have complied with the conditions stated on pages 49 to 51, for the attainment of that degree.

THE DEGREE OF BACHELOR OF SCIENCE will be conferred upon students who shall have completed the General Course in Science, the Special Course in Biology or in Chemistry, or the Medical Preparatory Course, complying in a satisfactory manner with the conditions stated on pages 51 and 89.

THE DEGREE OF BACHELOR OF SCIENCE in Civil Engineering, in Electrical Engineering, or in Mechanical Engineering, will be conferred upon students who shall have completed the required course, under the same conditions.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain the degree of Bachelor of Science in Civil Engineering, Electrical Engineering, or in Mechanical Engineering, after a graduate course of one year in the Engineering Department.

For the advanced degrees of MASTER OF ARTS, DOCTOR OF PHILOSOPHY, CIVIL ENGINEER, ELECTRICAL ENGINEER, and MECHANICAL ENGINEER, see Graduate Department, page 128.

# The Graduate Department.

## EXECUTIVE BOARD OF THE GRADUATE DEPARTMENT.

ELMER H. CAPEN, D. D., *President.*
HEMAN A. DEARBORN, A. M.
WILLIAM G. TOUSEY, A. M., B. D.
AMOS E. DOLBEAR, M. E., Ph. D.
GEORGE T. KNIGHT, A. M., D. D., *Secretary.*
J. STERLING KINGSLEY, S. D.

## INSTRUCTION.

Graduate instruction is given by the General Faculty. The advanced elective work offered to undergraduates in any department of the College of Letters is open to graduate students, and will count for the degree of Master of Arts, on condition that it be not counted for any other degree. Additional courses still more advanced may be arranged in many cases with the instructor in whose department the work is to be done.

## DEGREES.

The degrees offered are Master of Arts, Electrical Engineer, Mechanical Engineer, Civil Engineer, and Doctor of Philosophy. Departments at present open to candidates for the degree of Master of Arts are : —

English Literature.
Modern Languages.
Latin.
Greek.
History.
Mathematics.
Chemistry.
Biology.
Electricity.

The degree of Doctor of Philosophy is offered in Chemistry and Biology.

The conditions upon which the several degrees may be obtained and the requirements of the departments are stated below.

THE DEGREE OF MASTER OF ARTS will be conferred upon graduates of Tufts College who have received the degree of Bachelor of Arts or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of Bachelor of Arts, upon the following conditions : —

1. They shall have completed an approved course of advanced study, including the equivalent of at least thirty term hours, in one or, at the most, two departments.
2. This course shall be pursued during a residence of not less than one year. The condition of residence may be waived by special permission, but in this case the degree cannot be taken with less than two years of graduate study.
3. The candidate shall prepare a thesis and pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.
4. No subject counted for the first degree will be counted for the second degree.
5. Candidates for this degree must make a written application to the Executive Board of the Graduate Department before October 1 of the college year in which the degree is to be conferred, and if the degree is not taken after one year's study they must also give a second notice three months before receiving the degree.

Graduates of Tufts College who have taken the degree of Bachelor of Philosophy, or graduates of other colleges holding a degree of similar grade, must complete the requirements for the degree of Bachelor of Arts before they can be entered as students in courses leading to the degree of Master of Arts.

THE DEGREE OF CIVIL ENGINEER, ELECTRICAL ENGINEER, OR MECHANICAL ENGINEER will be conferred upon Bachelors of Science in Civil, Electrical, or Mechanical Engineering, respectively, who shall satisfactorily pursue advanced professional study at the College for one year, under the conditions required of candidates for the degree of Master of Arts ; or who shall present suitable evidence of three years of professional work, of which one must be in a position of responsibility, in which case a certain amount of professional study will be assumed, upon which a thesis shall be presented.

The Degree of Doctor of Philosophy will be conferred upon Bachelors of Arts, Philosophy, or Science, who shall have pursued at least three years of graduate study, two years of which must be in residence. This degree will not be conferred simply on the ground of the completion of the required course of study. High attainment is necessary, and especially the power of original thought and independent investigation. The whole course of study must be devoted to one subject, and a thesis must be presented giving evidence of original research. Other special requirements may be made by the instructors in charge of the work of the candidates. Each candidate must pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.

The candidate for this degree must make a written application to the Secretary of the Executive Board of the Graduate Department at least two years before the degree is to be conferred, and his thesis must be handed to the Secretary of the above board at least two months before Commencement.

The Degree of Master of Arts may be taken by candidates for the degree of Doctor of Philosophy at the end of their first year's study, or will be conferred together with the latter degree.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF MASTER OF ARTS. *

**English Literature.**— Candidates for the degree of Master of Arts must have taken subjects 1 and 2, with at least six term hours of work in one or more of the subjects numbered from 3 to 7. Six term hours must also have been given to one or more of the subjects numbered from 8 to 15. If not previously taken, the subjects numbered 13 and 14 may be pursued as a part of the graduate work, but the student will be expected to surpass, both in quantity and quality, the work required of undergraduates. In addition to catalogue subjects, the graduate student will be expected to present, in the required thesis, the results of some extended investigation in literary history or criticism.

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* Subject numbers referred to in these statements are those used under Departments of Instruction, pages 53 to 87.

**Modern Languages.**— The extended undergraduate courses offered in Modern Languages enable the candidate for the degree of Bachelor of Arts, who specializes in this department, to cover the work formerly required for the Master's degree. For those who have not taken the more advanced subjects, the department offers a full graduate course leading to the degree of Master of Arts. The work is performed in existing undergraduate classes. (See pages 58 to 62.) To enter upon this course, the candidate must have completed the equivalent of six of the Modern Language subjects, including 1 and 2 in both German and French. Of elementary subjects only Italian may be taken by such as have had the equivalent of two years of French. Graduate students whose special work is being performed in other departments are admitted to such classes in German and French, beyond subject 1, as their proficiency will allow.

**Latin.**— Candidates for the degree of Master of Arts in Latin must have completed with credit all the subjects named on pages 62 and 63 except 4 and 6. In subject 4 graduate students will be required to do more work than undergraduates. Subject 6 is intended for those who have taken all the others. The required thesis must embody the result of the special investigation of some author or period, or of some philological or archæological subject.

**Greek.**— Candidates for the degree of Master of Arts in Greek must have completed Greek 1, 2, 3, or 4, and 5 or 6, or equivalents for these subjects. Latin may be taken as minor work with Greek. Graduate students will be expected to do work of advanced character, whether in classes with undergraduates, or on special lines of investigation assigned by the instructor. The required thesis, on some approved topic, relating to some author, period, or philological problem, must give evidence of this advanced attainment.

**History.** — Every graduate student who intends to become a candidate for a degree must have taken History 1 and 4, or their equivalents. Candidates for the degree of Master of Arts must be able to read French works, and a working knowledge of German is desirable, and may in some cases be necessary. Of the subjects announced in the program of this department on pages 68 to 71, 2, 3, 5, 6, and 7 will be accepted as part of work leading to the degree of Master of Arts. In addition to these subjects work will be laid out for graduate students in such special lines as individuals may desire to pursue. Certain collateral subjects may be called for in such cases. Graduate students will be expected to do something in the way of independent investigation of a definite subject, the results to be embodied in the thesis required to obtain the degree.

**Mathematics.**— Graduate students in Mathematics must have passed creditably the prescribed undergraduate work in this department — Mathematics 1 — and may do graduate work from that point or from such more advanced point as they may have attained. Graduate students in Mathematics 2, 3, 4, 5, 6, and 7 will be required to do more advanced work in these subjects, to receive the degree of Master of Arts in Mathematics, than is required of undergraduate students.

**Chemistry.**— Candidates for the degree of Master of Arts must have completed subjects 1, 2, 3, and 10, or their equivalents. Subjects 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, and 15 are offered for graduate students, and satisfactory work must be done in at least five of these subjects. The candidate must present an acceptable thesis and pass satisfactory examinations in all of the subjects studied.

**Biology.**— Candidates for the degree of Master of Arts in

Biology must have already done work equivalent to Biology 2, 3, and 4; or, lacking that, they must take omitted subjects in addition to their graduate work. The work will be done in the lines of comparative anatomy, histology, or embryology, and will include a thesis embodying original research.

**Electricity.**— The candidate for the Master's degree in Electricity must have done substantially the work in that department required of the Bachelor of Electrical Engineering. This involves the election during his undergraduate course of studies in this department, if it is expected that the degree will be obtained within one year of graduate study.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

**Chemistry.**— Candidates must be able to translate scientific German readily and accurately before beginning their work, and must have already taken subjects 1 to 7 inclusive, 9 and 10, or equivalent work. Unless previously qualified, they must take subjects 11, 12, 13, 14, 15, and 17, and devote at least one year to subject 16. Examinations in the above subjects must be satisfactorily passed, and a thesis embodying an original investigation in Chemistry must be presented.

A well-equipped laboratory is open to graduate students who may wish to pursue special lines of research, and the department is prepared to offer every facility for the encouragement of original investigations.

**Biology.**— Candidates must have a good working knowledge of French and German before beginning their work, they must carry on research in Animal Morphology for at least three years, two of which must be in residence, and they must have passed one summer at some seashore biological station. They must pass an examination on general zoölogy, embracing not only the fundamental facts of morphology and classification, but the more prominent philosophical views as well. Each candidate must present an acceptable thesis embodying original research, with an adequate discussion of the bearings of the facts discovered, and the views of previous writers on the same subject.

## FELLOWSHIPS.

THE OLMSTEAD AND MINER FELLOWSHIPS IN NATURAL HISTORY.— In accordance with the spirit of the gift of the late Charles Hyde Olmstead, of Hartford, Conn., the Trustees have established two fellowships in Natural History, to be known respectively as the Olmstead and the Miner Fellowships. The income of these fellowships, amounting to two hundred and fifty dollars annually each, is awarded by the Trustees to graduate students in Natural History upon recommendation of the graduate Faculty. The conditions of the fellowships are as follows: —

(1) The application must be made in writing before May 1, addressed to the President of the College. It must contain evidence of a liberal education, of an ability to profit by the work to be done, and testimonials of good character from instructors or others. Any original article, either written or printed, is an aid in ascertaining the attainments of the candidate.

(2) The holder of the fellowship will be expected to devote himself to the prosecution of some special subject under the direction of the professors in charge of the departments of Natural History. He may be called upon for minor services, such as conducting examinations, but he shall not be called upon to teach. He may, however, at his own option, and with the approval of the President, give instruction by lectures or otherwise to persons connected with the College, but not elsewhere.

(3) The payments will be made, half in January, and half in June; but, in case of resignation or removal from the fellowship, payment will be made only for the time it is actually held. The holder of the fellowship is not exempt from the payment of tuition.

(4) Residence is a condition of holding either of these fellowships.

The holder of a fellowship may be eligible to a single reelection, but incumbency constitutes no claim to reappointment.

## TUITION.

The tuition fee for the whole course for the degrees of Master of Arts, Civil Engineer, and Electrical Engineer is *one hundred dollars*, of which *fifty dollars* is payable in advance.

The tuition fee for candidates for the degree of Doctor of Philosophy is *one hundred dollars* for each year spent at the College, of which *fifty dollars* is payable in advance each year.

The requirement of bonds stated on page 120 applies to all students of the College, graduate as well as undergraduate.

# THE DIVINITY SCHOOL

# Faculty of the Divinity School.

ELMER H. CAPEN, D.D., PRESIDENT.
*In charge of Political Economy.*

CHARLES H. LEONARD, D.D., DEAN.
*Goddard Professor of Homiletics and Pastoral Theology.*

THOMAS J. SAWYER, D.D., LL. D.,
*Packard Professor of Christian Theology, Emeritus.*

WILLIAM G. TOUSEY, A.M., B.D.
*Professor of Ethics and Philosophy of Theism.*

GEORGE T. KNIGHT, D.D., SECRETARY.
*Professor of Church History, also in charge of Systematic Theology.*

GEORGE M. HARMON, A.M., B.D.
*Professor of Biblical Theology.*

DAVID L. MAULSBY, A.M.
*Professor of Oratory.*

WARREN S. WOODBRIDGE, A.M., B.D.
*Woodbridge Professor of Applied Christianity.*

## NON-RESIDENT LECTURERS.

HENRY I. CUSHMAN, D.D.
*Lecturer on Methods of Biblical Study.*

F. W. HAMILTON, A.M.
*Lecturer on Christian Economics.*

CHARLES R. TENNEY, B. D.
*Lecturer on Character and the Ministry.*

*For students of the Divinity School, see the Register, pages* 29 *and* 30.

*For the Calendar, see pages* 4 *and* 5.

# The Divinity School.

The Divinity School is one of the departments of Tufts College, the general advantages of which are enjoyed by all its members in common. The College Library, the Museum of Natural History, the Gymnasium, are open to all. Courses of study and lectures in the College of Letters are open to the Divinity Students, subject, however, to the discretion of the Faculty. The graduates of the Divinity School in common with the graduates of the other departments are enrolled in the Quinquennial Catalogue of the College, and are eligible to membership in the Alumni Association of Tufts College.

## REQUIREMENTS FOR ADMISSION.

Candidates unknown to the Faculty must bring satisfactory testimonials of good character. They must believe in the Christian religion, and have a sincere purpose to devote their lives to the Christian ministry. It is expected that they will present themselves on the day preceding the first day of the academic year.

Bachelors of Arts are admitted to a three-years course, without examination, to be candidates for the degree of Bachelor of Divinity. Candidates for this degree who are not Bachelors of Arts are required to take a four-years course, and to well sustain an examination on average passages from the Latin of Cæsar, Cicero, and Virgil; and on average passages from the Greek of Xenophon, Homer, and the Gospels. Ability to read simple prose in French or German, and to write in French or German a paragraph upon an assigned subject, is accepted as an alternative for the requirement in Latin.

They are also required to pass a satisfactory examination in Greek, Roman, English, and American History; in Rhetoric; in English Literature and in English Grammar and Composition, in which the requirement is as follows: —

English Grammar and Composition. — Spelling, punctuation, structure of sentences, correct use of words, clearness of expression.

The examination will consist (1) in criticising specimens of incorrect English; (2) in writing a short composition on a subject assigned. Subjects for composition will be drawn from the following standard works in English literature. All the books named for the given year are to be read, and, from two or three of them, subjects will be assigned at the time of examination.

For 1897. — Shakespeare's As You Like It, and Merchant of Venice; Defoe's History of the Plague in London; Burke's Speech on Conciliation with America; Scott's Marmion; Macaulay's Life of Samuel Johnson; Irving's Tales of a Traveller; Hawthorne's Twice Told Tales; Longfellow's Evangeline; George Eliot's Silas Marner.

For 1898. — Shakespeare's Macbeth; Milton's Paradise Lost, Books I. and II.; Pope's Iliad, Books I. and XXII.; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Coleridge's The Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables; Tennyson's The Princess.

For 1899. — Dryden's Palamon and Arcite; Pope's Iliad, Books I., VI., XXII., and XXIV.; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; De Quincey's The Flight of a Tartar Tribe; Cooper's The Last of the Mohicans; Lowell's The Vision of Sir Launfal; Hawthorne's The House of the Seven Gables; Shakespeare's Macbeth; Milton's Paradise Lost, Books I. and II.; Burke's Speech on Conciliation with America; Carlyle's Essay on Burns.

Those whose age or circumstances forbid so extensive preparation are admitted to the privileges of the school, to take such studies in the regular classes as are suited to their attainments and needs. It is recognized that earnest and capable men aspire to the Christian ministry, who are not able to make the formal preparation required of those who enter to be candidates for the degree.

Applicants from other theological institutions whose course of study is the equivalent of that pursued in this institution, will be received *ad eundem*.

# Course of Study.

## SUB-JUNIOR CLASS.

**Psychology.** — The Intellect; The Sensibilities; The Will; Leading Questions of Mental Philosophy. *Three hours a week* (*first half-year*). PROFESSOR TOUSEY.

**Logic.** — The First Principles of Logic; Concepts and Propositions; Immediate Inference; Deduction; Induction; Analogy; Hypothesis. *Four hours a week* (*second half-year*).
PROFESSOR TOUSEY.

**English.** — One or more courses to be selected, under direction, from those offered in the College of Letters [see page 53–58]. *Three hours a week.*

**New Testament.** — Historical Introduction; Days before Christ. *Two hours a week.* PROFESSOR HARMON.

**Oratory.** — Class Exercises in Vocalization and Gesture. The Principles of Oratory exemplified in practice. *One hour a week.*
PROFESSOR MAULSBY.

**A Science or Language Study.** — (To be selected under direction of the Faculty.) *Three hours a week.*

## JUNIOR CLASS.

**Logic.** — Fallacies; Analysis of Arguments; Ethics of Belief. *Two hours a week* (*first half-year.*) PROFESSOR TOUSEY.

**New Testament.** — Criticism of the Synoptic Gospels, Textual and Historical; Hermeneutics; Life and Teachings of Jesus from the Greek of the Synoptic Gospels, with studies from the life of his times. *Four hours a week.* PROFESSOR HARMON.

**Church History.** — History of the Church, of the Sects, and of Doctrines, from the Apostles to the Present Time; History of Doubt. *Four hours a week* (*first half-year*); *three hours a week* (*second half-year*). PROFESSOR WOODBRIDGE and PROFESSOR KNIGHT.

**Homiletics.** — History of Preaching; The Idea and Structure of the Sermon; Homiletic Analysis. *Three hours a week* (*second half-year*). PROFESSOR LEONARD.

**English Bible.** — Uses of Scripture in Public Worship; Reading of Selections. *One hour a week.* PROFESSOR KNIGHT.

**Oratory.** — Practice in the reading of Scripture, Hymns, and in formal and extemporaneous preaching. *One hour a week.* PROFESSOR MAULSBY.

## MIDDLE CLASS.

**New Testament.** — Criticism of Acts and the Epistles; History and Doctrines of the Apostolic Church, from the Greek of Acts and the Epistles, with studies from the life of the times. *Four hours a week.* PROFESSOR HARMON.

**Ethics.** — The Moral Nature; Ethical Theory; Practical Ethics; Ethics and Theism. *Three hours a week.* PROFESSOR TOUSEY.

**Systematic Theology.** — Theology; Anthropology; Soteriology; Eschatology; Critical Study of Modern Doctrines. *Four hours a week (first half-year); three hours a week (second half-year.)* PROFESSOR KNIGHT.

**Homiletics.** — Study of Sermons of Eminent Preachers; Lectures; Sermon Writing and Preaching. *Three hours a week.* PROFESSOR LEONARD.

**Applied Christianity.** — Organization and Government of the Various Sects; the Relations of the Church to Individual and Social Life. *Two hours a week.* PROFESSOR WOODBRIDGE.

## SENIOR CLASS.

**New Testament.** — Criticism, Exegesis, and Doctrines of the Fourth Gospel. *Two hours a week.* PROFESSOR HARMON.

**Comparative Theology.** — The Religions of Ancient Egypt and Chaldæa: Hinduism; Buddhism; Confucianism; Taouism; Parseeism; Mohammedanism. *Three hours a week (first half-year).* PROFESSOR KNIGHT.

**Philosophy of Theism.** — The Final Problem; Limits of the Intelligence; Theistic Arguments; Final Cause in Nature; Anti-Theistic Theories. *Three hours a week.* PROFESSOR TOUSEY.

**Political Economy.** — Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, Lectures, and Independent Investigations dealing with the History of Economics, Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Three hours a week (first half-year).* PRESIDENT CAPEN.

**Homiletics.** — Homiletic Analysis; Lectures on Preaching; Composition and Delivery of Sermons. *Three hours a week.*

PROFESSOR LEONARD.

**Applied Christianity.** — The Pastor's Personal Qualifications and Duties; Organized Work in the Parish; The Conduct of Public Worship; The Mode of Conducting the Special Services of the Church; Actual Work in Missions and Charities. *Four hours a week (second half-year).*

PROFESSOR WOODBRIDGE *and* PROFESSOR LEONARD.

# Departments of Instruction.

**Psychology.**— The direct study of mental phenomena is encouraged, and the student is trained in the methods of psychological research. At suitable points attention is called to the great philosophical questions that have their origin in the study of mind. The aim throughout is eminently practical; and, while seeking a consistent theory of mental phenomena, there is constant reference to the professional uses of the science,— to the bearing of psychological law upon self-culture, and upon the arts of instructing and persuading men. Special effort is also made to supply the psychological data of the subsequent studies of the course.

**Logic.**— The Sub-Juniors receive instruction in the usual topics of an academic course. Considerable time is given to logical analysis and the employment of the inductive method as respects both discovery and proof.

The Juniors are exercised more especially in the application of logical principles. A review of the fallacious tendencies of the mind is followed by an extended study of Fallacies, as exemplified in the practical reasoning of men. The course concludes with a brief study in the Ethics of Belief. Under this head the nature and conditions of belief are discussed, the general principles of evidence reviewed, and certain current misconceptions exposed; the aim being to enforce the duty of rationalizing our beliefs, and while pointing out the limitations of the reason, to develop confidence in its actual findings, and a proper fortitude of conviction.

**English.** — The efficiency of the clergyman is so largely conditioned by literary ability that much emphasis is placed upon the study of English. Opportunity is given to the student to elect in the College of Letters, in the direction both of composition and English literature. Well-directed practise in English composition affords direct aid in the formation of literary style, while the influence of the study of the masterpieces of literature, though indirect, is no less powerful in developing a feeling for appropriate expression. Moreover, the great poets and prose-writers abound in suggestion for the public speaker both in their thought and its expression. In consequence, divinity students are expected to take such of the offered subjects as are adapted to their individual needs and available time. Some are advised to continue this work even throughout their whole theological course.

**New Testament.** — In the Sub-Junior Year, the history of the Jewish people from the Conquest of Alexander till the opening of Jesus' ministry, is pursued to acquaint the class with the events involved, with the growth of the institutions, the rise of parties, the origin and character of the literature, and the changes in the social and religious sentiment of the Jewish people during this period, with the aim to secure as clear and complete an understanding as possible of the conditions under which Jesus began his ministry.

In the Junior Year the sources of the text of the New Testament are considered with the principles employed in determining the true text, the aim being to render the student intelligent as to the procedure in Textual Criticism, and the bearing this procedure has on the work of exegesis. The History of the Canon for the first two centuries, and the historical and literary criticism of the Gospels, are next treated, to secure on the part of the student an understanding of the principal problems involved and the grounds of their discussion, the habit of sober and sound criticism, and a knowledge of the nature and contents of the Gospel writings.

In dealing with the Life of Jesus, notes on methods of correct interpretation are given the class, and their application is required in its exegetical work. The significant points and phases in the life and ministry of Jesus are selected and considered, passages from the Greek of the Synoptic Gospels being employed, to obtain a knowledge of the mind of Jesus, his relations to the parties and people of his times, the methods he pursued in his ministry, the course of facts in his life, and the doctrines he taught. Incident to this study, the critical points in dispute are considered as they arise. Historical and archæological questions are examined in their natural connections.

In the Middle Year the History and Doctrines of the Apostolic Church are studied, the Book of Acts being used as the basis. This writing is first examined as an historical authority; passages from it in Greek are chosen, giving the significant stages in the external growth of the church and in its internal development; and these are studied with the aim to trace the first realization of the life of Jesus in the world. The Epistles of St. Paul are critically examined in the order of their origin in his ministry. The introduction to Hebrews and to the Catholic Epistles concludes the year's work.

As a part of this study the Theology of the New Testament is taken up. The attempt is made to discover the teaching of Jesus contained in the Synoptic Gospels. With this teaching as the basis, the individual interpretations of the several Synoptists, of the author of the Fourth Gospel, of St. Paul in his earlier and later epistles, of the author of Hebrews, and the writers of the Catholic Epistles, are compared, each writing being first considered by itself. The aim is to obtain the common elements of teaching, and also what is distinctive in each writer and time.

In the Senior Year the problem of the Fourth Gospel is considered: the question of its use among the early Fathers, its internal character and its relation to the other New Testament writings, and to the thought of the Apostolic Church. The books used in the latter part of this year's work are in the German language.

**Church History.** — The purpose is to secure a knowledge of the leading facts and forces in the history of the Christian Church in its various branches. By such a knowledge, discovering the causes now at work in religion, the student obtains a grasp of present facts and problems such as he can obtain from no other source. Incidentally he becomes familiar with theological terms, and is furnished with the tools of theological work. In general, since in some degree the individual grows as the mass has grown, he finds in this study an education, an orderly development of his faculties.

The topics generally studied in regard to each period are: The External Growth of the Church, and its relations to the State; the Internal Organization; Intellectual Life and Doctrine; Moral Life; the Form and Substance of Worship. In the latter part of the year special study is made of the chief religious sects in the United States, and, lastly, of the History of Doubt.

The books used by the student are mostly contained in the Library of the College and in that of the Universalist Historical Society. They include Migne's edition of the Fathers; translations of the ante-Nicene Fathers, and others; the chief secondary authorities on general Church History, such as the works of Schaff, Fisher, Neander, Alzog; and the special historical works of Fisher, Müller, Dorner, Briggs, Eddy, Ballou; and of the American Church History series.

In preparation for the regular class-room exercise, the student is provided with an analysis of each topic in order, and with references to original and secondary authorities. The student brings the result of his investigation to the class-room for criticism by his associates and instructor. At the completion of each topic the results are organized, and a written review held, the papers of which are returned, with comments as to truthfulness and mode of handling.

The students are also instructed in the methods of original investigation from primary authorities; and, especially in the history of doctrines, they prepare several pieces of original work during the year.

**Comparative Theology.**— The primary aim of this study is a general knowledge and a catholic temper regarding the non-

Christian religions. A secondary utility is found in that a candid study of the excellencies and defects of many religions renders the student more able to reject the false, and more inclined to rest in the true, and to give it his confidence and strength.

The sources of information to which the student is referred are the Records of the Past, Müller's edition of the Sacred Books of the East, Müller's own writings, the series entitled Non-Christian Religious Systems; and, in addition, the works of Rawlinson, Wilkinson, Sayce, Johnson, Barth, Legge, Oldenberg, Edkins, Haug, and others. Considerable use is also made of articles in the Encyclopaedia Britannica.

The religions studied are those of ancient Egypt and Chaldaea; Hinduism, ancient and modern; the religions of Gautama Buddha, Confucius, Lao-tse, Zoroaster, and Mohammed.

The chief topics noted are: The Deity; the Forms and Meaning of Worship; the Theory of Ethics, and the Sanctions of Moral Life, including the Scheme of Salvation; the Actual Condition of the People representing each religion.

For the study of each topic in turn, the class is furnished with a syllabus and references. The results of their investigations are criticised and co-ordinated by students and instructor in the class-room.

The main purposes of this study are further secured by frequent inductive reviews, oral and written.

**Ethics.**—Analytical and inductive study of the moral experience is followed by an attempt to develop a correct moral theory. Attention is given to the leading questions in ethical philosophy. Such doctrines as Sentimentalism, Hedonism, Utilitarianism, Intuitionalism, and Determinism are studied, not merely in a critical spirit, but with a view to discover the special aspects of truth for which they stand.

During the second half of the year the class attends more especially to Practical Ethics, dealing with the leading contemporary problems, such as Education, Charities, State Aid, Temperance, Socialism, etc. Some attention is also given to

Casuistry. The course concludes with a review of what is distinctively known as Christian Ethics. The instruction throughout is shaped to bring into clearness the fundamental principles of morality, and to show their importance in the conduct of the personal life and in the moral guidance of others.

**Philosophy of Theism.**— After some discussion of Agnosticism and other antecedent objections to Theism, the various modes of the theistic argument are reviewed, their grounds scrutinized and their logical value carefully considered. In discussing the attributes of God, and his relation to the universe, Pantheism and Pessimism receive somewhat special notice. The general method here, as in ethics, is to employ treatises available as texts, and to supplement them by means of annotations, lectures and parallel readings, the aim being to lead the student to the sources of evidence, and to establish a vigilant and correct method of inquiry. Much importance is attached to the dialectic of the class-room, as securing a ready command of resources, and as a corrective of ill-defined notions and hasty inference. An effort is made to treat subjects in the light of contemporary criticism and the latest developments of science ; and, by testing and chastening conclusions, to provide against fanaticism on the one hand, and frivolity of judgment on the other.

**Systematic Theology.**— The purpose is, primarily, to assist the student to think independently on theological subjects, and to abide in the consequences. In pursuing this purpose attempt is made to co-ordinate the products of Biblical Theology, Religious History, Natural Theology, Ethics, and, indeed, of all the proper sources of material, and thus to produce a scientific theology. It is believed that such a system will deserve and receive the student's confidence, and will enlist his energies.

The subject has four great divisions,— the Doctrine of God, the Doctrine of Man, the Doctrine of Salvation, and the

Doctrine of the Future Life. The traditional sub-divisions are noted historically, but are accepted only so far as they seem to rest on essential principles or the real relations of truth.

The method includes several stages: —

1. The outline history of thought on the topic in hand, or the analysis and classification of opinions and theories according to their logical relations.
2. The collection of the facts, so far as given in the present state of knowledge, and the criticism of the theories on the basis of the facts.
3. The organization of the results into a scientific product.
4. Illustrative applications to practical problems,— ecclesiastical, political, social and personal.

This method requires frequent reference to books used in the departments whose products are here co-ordinated, and to the theological works of A. H. Strong, Charles Hodge, James Martineau, Robert Flint, J. A. Dorner, H. Martensen, J. Müller, and other representative teachers of all times and faiths.

The student is furnished with references to the various sources of material, he is instructed in the method of inquiry, and his results are criticised in the class-room. The occasional written examinations require original work, in part, and one original essay from each student is required within the year.

**Homiletics.** — The course in Homiletics covers one half of the Junior year and all of the Middle and Senior years, and includes the study of the most characteristic and instructive periods in the history of preaching; dictations and lectures on the idea and structure of the Sermon; analyses of portions of the Old and the New Testaments, with a view to the homiletical use of texts; the study of printed sermons, with special reference to form, expression, and the character and range of illustration; the composition and delivery of sermons, not less than six during the year, all of which are criticised by the class and by the professor; lectures during the Senior year on

Invention and Arrangement of Material, Modes of Development, Style in Spoken Discourse, Helps in Sermon-Preparation, Illustrations and Use of Anecdote, the Homiletic Habit, Modern Schools of Preaching, Philosophy of Preaching, Personality in Preaching, Character and Preaching.

**Applied Christianity.** — I. The History of Christianity is traced from its beginnings, with the special aim to discover by what methods the application of Christian principles has been secured and what results have followed; and in general to study the influence of Christianity as a factor of individual development and social progress.

II. The second part of this course is devoted to a study of Christian principles in their present day applications, and of the Christian Church as it exists in modern times, giving attention to the constitution, organization, government of the various sects, and also to methods of work in missions, in reforms, and charities as these are undertaken by Christians of to-day. This study is followed with a discussion of the visible opportunities for work proper to the Church and to Christians, and of the instrumentalities which the most successful working churches employ.

III. The final topic in this department is the pastor's office. The subjects discussed relate to the more private and personal care which the minister exercises toward the members of a single congregation, or toward others whom he may be expected to influence. Careful study is invited to the qualifications, spiritual, mental, social, of a good pastor, the methods of forming and strengthening a parish, the conduct of public worship, and the mode of conducting the special services of the church, — baptism, confirmation, the Lord's Supper, marriage, and the burial of the dead. The object in this part of the course is the practical preparation of the pastor for his sacred duties.

The work (II and III) of the Middle and Senior years is supplemented with lectures by clergymen and others, who are actively engaged in missions and charities; and the students are encouraged to visit churches and stations in the neighboring cities, that they may study the methods of those who are in living contact with want and suffering; engage in actual benevolent work under the direction of skilled workers, and make report of what they see and do, for discussion in the class-room. This special work is meant to meet the demand for a closer contact between the church and the daily lives of the people, and for a more sympathetic interest in their social and industrial problems.

**English Bible.**— The object of this course is to show how the literary value of the Bible may be used to further the cause of religion. We therefore aim to observe the natural fitness of different parts of the Bible to different public services, and to render them appropriately. It is believed that the Scriptures may thus receive a more extended attention and increased honor. Professor Moulton's series called The Modern Reader's Bible will be used as the text. The course is open to all classes in the school.

**Oratory.**— The object of the instruction in the department of Oratory is a natural, impressive, and reverent manner of reading the Bible and the hymn-book, and also to cultivate in preaching a delivery that shall be forcible and sincere. To this end the work of the first year involves consideration of the fundamental pinciples that underlie all oratory, accompanied by practice to assimilate these principles. In the second year the practice becomes specifically adapted to the needs of students of divinity, and includes Scripture and hymn reading, and the preaching of both written and unwritten discourse.

**Physical Training.**— Regular exercise in the Gymnasium is ordinarily required three hours a week of men students from the middle of November to the middle of March during the two years following entrance. The kind of exercise prescribed for each man depends on his physical condition, as determined by careful medical examination. Provision is made for continuing physical exercise throughout the whole course, according to individual needs.

# General Information.

### RELIGIOUS EXERCISES.

Devotional exercises, conducted by the professors and the students, are held daily in the chapel. Members of the upper classes prepare sermons and preach them in turn before the class. An active branch of the Young People's Christian Union holds regular meetings for religious conference.

### EXAMINATIONS.

Frequent written reviews are held in all departments; and when any subject is completed, the students are required to pass a written examination thereon.

### LIBRARIES AND LECTURES.

Students have free access to the general library of the College and to the valuable library of the Universalist Historical Society. Important public libraries of Boston are open to students for consultation.

Supplementary lectures, which bear upon the general work of the Christian ministry and upon special subjects of study, are given at intervals throughout the year by well-known clergymen of the vicinity.

### ELECTIVE STUDIES.

Students are permitted to elect studies in other departments of the College, subject, however, to the discretion of the Faculty. Opportunities for pursuing advanced studies are offered to graduates and to others sufficiently qualified.

### GENERAL FACILITIES.

Important facilities for general improvement are offered to students, in the valuable libraries and museums of Boston and

vicinity. Elaborate courses of lectures on scientific, social, and literary subjects are presented to the public from time to time. The most noted divines of New England officiate every Sunday within easy distance, and may be studied by the student in respect to their teachings and their methods. It is the policy of the school to encourage the judicious use of these important instrumentalities of culture.

## THE DEGREE OF MASTER OF ARTS.

THE DEGREE OF MASTER OF ARTS is conferred at the same time with the degree of Bachelor of Divinity upon Bachelors of Arts of Tufts College who have pursued with distinction the full course for B. D. This degree is conferred under the same conditions on Bachelors of Arts of other colleges, whose courses of study have been equivalent to the course for which the degree of A. B. is given by Tufts College.

This degree may also be received by Bachelors of Arts, who do not apply for the degree of Bachelor of Divinity, after taking with credit an approved course of one year or more in this school, under conditions defined in the statement of the Graduate Department.

## BUILDINGS FOR THE USE OF THE DIVINITY SCHOOL.

Miner Theological Hall contains eight large, well-lighted, and well-ventilated lecture rooms, and a special room for the meetings of the Faculty. Until other buildings are provided one of the rooms in this hall is used for the Historical and Reference Libraries, and one is appropriately furnished for the Religious Services of the school. A third room in the same hall is furnished as a parlor, and known as the Maria Miner Reception Room.

Paige Hall, the Dormitory of the Divinity School, contains thirty-six single rooms, heated by steam and lighted by gas. Each room is carpeted, and provided with all necessary furniture — except sheets, blankets, pillow-cases, and towels.

Rooms are assigned in the order of application, but no room is reserved for any applicant who does not appear within one week of the opening of the College year.

The women students in the Divinity School may find rooms and board in Metcalf Hall on the same terms and subject to the same conditions as apply to the women who enter the College of Letters.

## EXPENSES AND PECUNIARY AID.

Beginning with the college year 1897–98, students in the Divinity School will be charged *one hundred dollars* annually for tuition. This charge will include the privilege of occupying a room in Paige Hall, and provision for heating and caring for it. A remission of one half of this amount may be made by the Executive Committee of the Trustees to students who cannot be accommodated in Paige Hall or who live at home. The necessary expenses for board, washing, gas, and gymnasium charges do not exceed two hundred dollars a year. The General Convention of Universalists aids students by a system of loans not exceeding one hundred and fifty dollars a year to any one student; and the Faculty of the Divinity School is authorized to assign Dockstader scholarships to those whose circumstances require it. Those students, also, who are in the regular course are permitted to preach, under the direction of. the Faculty, during the year and a half preceding their graduation. In this way they may add to their pecuniary resources.

## BONDS AND DEPOSITS.

Each student who enters the Divinity School is required to deposit with the Bursar of the College either a bond, with two satisfactory sureties, for the amount of one hundred dollars, or he may deposit the sum of fifty dollars in money, which sum will bear interest at the rate of four per cent yearly, and will be returned to the student when he leaves the Divinity School, his term bills first being paid in full.

## LICENSE TO PREACH.

The regular time for applying for licensure is near the close of the first half of the middle year. Before that time the members of the Divinity School are not allowed to preach.

## SCHOLARSHIPS, ETC.

THE GREENWOOD SCHOLARSHIP. — The income of one thousand dollars, bequeathed by the late Mrs. Eliza M. Greenwood, of Malden, is given in prizes to members of the Divinity School for excellence in the department of Oratory.

THE DOCKSTADER SCHOLARSHIPS. — The income of ten thousand dollars, given by George A. Dockstader, of New York, is appropriated to the aid of needy and worthy students.

The income of five hundred dollars, given by REV. JOHN VANNEVAR, is used in the purchase of books for the Department of Homiletics.

# THE MEDICAL SCHOOL

# Faculty of the Medical School.

ELMER H. CAPEN, D. D., President.

JOHN L. HILDRETH, A. B., M. D., 14 Garden Street, Cambridge.
Dean *and Professor of Clinical Medicine.*

CHARLES P. THAYER, M. D., 74 Boylston Street, Boston.
Secretary *and Professor of General, Descriptive, and Surgical Anatomy.*

HENRY W. DUDLEY, M. D., Abington.
*Professor of Pathology.*

WALTER L. HALL, M. D., Medford.
*Professor of the Principles and Practice of Medicine.*

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*Professor of Surgery.*

FRANK G. WHEATLEY, A. M., M. D., North Abington.
*Professor of Materia Medica and Therapeutics.*

SAMUEL G. WEBBER, A. B., M. D., 146 Marlboro Street, Boston.
*Professor of Neurology.*

ERNEST W. CUSHING, A. B., M. D., 168 Newbury Street, Boston.
*Professor of Gynæcology.*

ARTHUR E. AUSTIN, A. B., M. D., 585 Washington Street,
*Professor of Medical Chemistry.* Dorchester.

CHARLES A. PITKIN, A. M., Ph. D., South Braintree.
*Professor of General Chemistry.*

HAROLD WILLIAMS, A. B., M. D., 528 Beacon Street, Boston.
*Clinical Professor of the Diseases of Children.*

JOHN A. TENNEY, M. D., 2 Commonwealth Avenue, Boston.
*Professor of Ophthalmology.*

HERBERT L. SMITH, A. M., M. D., 156 Newbury Street, Boston.
*Professor of Clinical Surgery.*

WALTER CHANNING, M. D., Brookline.
*Professor of Mental Diseases.*

THOMAS M. DURRELL, M. D., 23 Bow Street, Somerville.
*Professor of Medical Jurisprudence.*

FREDERICK L. JACK, M. D., 215 Beacon Street, Boston.
*Professor of Otology.*

GEORGE H. WASHBURN, A. B., M. D., 311 Marlboro Street, Boston.
*Professor of Obstetrics.*

FREDERIC M. BRIGGS, A. B., M. D., 299 Beacon Street, Boston.
*Assistant Professor of Clinical Surgery.*

CHARLES G. CUMSTON, B. M. S., M. D., 871 Beacon Street, Boston.
*Assistant Professor of Surgical Pathology.*

## OTHER INSTRUCTORS.

WILLIAM R. WOODBURY, A. B., M. D., 164 Newbury Street,
*Lecturer on Hygiene.* Boston.

WILLIAM A. WHITE, M. D., 22 Howland St., Roxbury.
*Lecturer on Diseases of Children.*

WALTER J. OTIS, M. D., 267 Beacon Street, Boston:
*Lecturer on Rectal Diseases.*

WILLIAM S. BOARDMAN, M. D., 57 Hancock Street, Boston.
*Lecturer on Laryngology.*

FRED S. RADDIN, M. D., Chelsea.
*Lecturer on Genito-Urinary Surgery.*

GEORGE A. BATES, D. D. S., Auburndale.
*Lecturer on Histology.*

GEORGE A. WEBSTER, M. D., 28 Greenwich Park, Boston.
*Instructor in Otology.*

EDWARD E. THORPE, M. D., 711 Boylston Street, Boston.
*Instructor in Medical Chemistry.*

HOWARD S. DEARING, M. D., 607 Tremont Street, Boston.
*Instructor in Clinical Medicine.*

HERBERT W. WHITE, M. D., 161 Warren Street, Roxbury.
*Instructor in Clinical Medicine.*

FRANK B. BROWN, M. D., 501 Washington Street, Dorchester.
*Instructor in Bacteriology and Assistant in Pathology.*

E. CHANNING STOWELL, A. B., M. D., Hotel Austerfield,
*Instructor in Children's Diseases.* Beacon Street, Boston.

THEODORE HOUGH, A. B., PH. D., 72 Pinckney Street, Boston.
*Instructor in Physiology.*

EDWARD L. TWOMBLY, A. B., M. D., 406 Massachusetts Avenue,
*Instructor in Clinical Medicine.* Boston.

WARREN F. GAY, M. D., 411 Marlboro Street, Boston.
*Instructor in Surgery.*

JOSEPH C. STEDMAN, M. D., 119 Sedgwick Street,
*Instructor in Rectal Diseases.* Jamaica Plain.

EDGAR GARCEAU, M. D., 22 Highland Street, Roxbury.
*Clinical Instructor in Gynæcology.*

CHARLES D. KNOWLTON, M. D., 18 Hancock Street, Boston.
*Demonstrator of Anatomy.*

THOMAS F. GREENE, M. D., 316 Warren Street, Roxbury.
*Assistant Demonstrator of Anatomy.*

JOHN I. FRENCH, M. D., Woburn.
*Assistant in Materia Medica and Therapeutics.*

S. P. COTTRELL, M. D., Hotel Oxford.
*Assistant in Gynæcology.*

PATRICK F. KELLEHER, M. D., City Hospital, Boston.
*Prosector of Anatomy.*

FRED STANLEY GRIFFIN, M. D., Watertown.
*Assistant in the Theory and Practice of Medicine.*

## Laboratory Assistants.

Hairabed S. Jelalian, Boston.
*General Chemistry.*

Hagop der Avedisian, Avon.
*Medical Chemistry.*

Henry Dalton, Cambridge.
*Bacteriology.*

## STANDING COMMITTEES OF THE MEDICAL SCHOOL.
## 1896-97.

Executive Committee. — The President, Dean, Secretary, and Drs. Wheatley and Williams.

Building. — The President, the Dean, the Secretary, and Drs. Channing, Cushing, Wheatley, and Williams.

Catalogue. — Drs. Thayer, Williams, and Briggs.

Nominations. — The Dean, Drs. Channing and Wheatley.

Library. — Drs. Jack, Webber, and Cumston.

Course of Instruction. — The Dean, Drs. Williams and Cushing.

Admission. — Drs. Dudley, Hall, and Durell.

# The Medical School.

The Tufts College Medical School was established in Boston in 1893. The institution is coeducational, women being admitted upon the same terms as men. The school was first located in a building belonging to the College and situated upon Boylston Street overlooking the Public Garden, but the unexpected increase in the number of students rendered larger accommodations imperative, and the Chauncy Hall School building was rented as a temporary headquarters while the building on the corner of Rutland Street and Shawmut Avenue could be prepared for its permanent location.

This new building, which will be the permanent home of the school, was formerly the property of the First Free Baptist Church, and is a handsome stone structure. The work of reconstruction has already been entered upon, and it is expected that the school will take possession of its new quarters early in the coming year. When completed, the new building will contain nearly fifteen thousand feet of floor space arranged in lecture rooms, laboratories, dissecting rooms, study, and toilet rooms of the most approved description, and every modern improvement possible will be provided for the health and comfort of the students, and for the intelligent study of modern medicine. Separate toilet and study rooms will be provided for the women students. A library and a pathological museum have been inaugurated by the Faculty.

During the past year radical changes have taken place in the administration of the school. Several of the former Board of Instruction have retired and new men have been appointed in their places; a new Dean has been elected; two new chairs have been created, and the list of instructors has been increased so that the efficiency of the teaching force is greatly augmented. This year the school inaugurates its graded four years' course, and in this connection it is interesting to note that while the number of the entering class is only slightly reduced, notwithstanding the longer time exacted from the student before he or she can receive the degree of Doctor of Medicine, the Senior class has largely increased.

# Departments of Instruction.

## Anatomy.

PROFESSOR THAYER.
DRS. KNOWLTON AND GREENE. } *Five hours a week.*

The course in Anatomy comprises, for the Freshman year, lectures, recitations, and demonstrations, illustrated by plates, models, and dissections. During the second year especial attention is devoted to Applied and Surgical Anatomy, and the relations of parts and organs in the various regions of the body are referred to, and their importance in the operations is emphasized and explained. In the dissecting room the student is required to carry on his work with neatness and precision, under the supervision of the Demonstrator, thus acquiring that familiarity with the use of instruments which is essential to the practitioner. The new dissecting room is fitted with all modern conveniences, and is under the personal supervision of the Professor of Anatomy. The dissections are made under the direction of the Demonstrator of Anatomy, who will assign the parts to students and give all necessary assistance and advice. Abundance of material is furnished students at cost.

## Histology and Embryology.

DR. BATES. *One hour a week.*

The course in Histology is both didactic and practical. The aim of the department is to present the subject comprehensively, beginning with the simple tissues, and by easy gradations presenting the more complicated structures of the body, thus enabling the student to acquire an intimate knowledge of the minute anatomy.

The department is equipped with microscopes and all materials necessary for practical demonstration.

The subject of Embryology is presented from the standpoint of the physician, the aim being to give the student such a knowledge of the subject as to enable him not only to comprehend those elements which are essential for his obstetrical work, but also to classify the tissues of the body according to our best knowledge of their origin in the embryo.

Students of the Medical School have access for work in Histology and Embryology to the admirable laboratories of the biological department of Tufts College in the Barnum Museum at College Hill.

### Physiology.

DR. HOUGH.

This branch is taught by means of lectures, recitations, and demonstrations. Beginning with a brief consideration of the more important groups of compounds of which the body is composed and to which it gives rise, the student passes to the study of the general chemical characters and reactions of blood and lymph, and of their relation to the tissues; this is followed with the physiology of muscle and nerve, especial emphasis being placed upon the phenomena of irritability, conductivity, relation to environment, etc., which these tissues present and which make them more or less typical of living cells of all kinds. The remaining parts of the subject are then taken up in the following order: The circulation of the blood, digestion and absorption, respiration, excretion, nutrition, the central nervous system, the organs of special sense. By this time the student has acquired an extensive acquaintance with the general functions of the various tissues and organs, and of the organism as a whole; the last month of the course is devoted to the discussion of various detailed applications of the general principles of physiology which are of practical importance in the further study and the practice of medicine.

### General Chemistry.

PROFESSOR PITKIN. *Five hours a week.*

This course consists of Descriptive Chemistry and Qualitative Analysis, with so much of Theoretical Chemistry as is necessary for a proper understanding of the subject.

The classification of the carbon compounds, also, is taken up at considerable length, and special reference made to those which are of interest in the study of medicine. The instruction is by lectures, recitations, and practical work by the students in the laboratory. Much attention is given to Qualitative Analysis, both for the sake of the valuable training which it imparts and the knowledge of Chemistry which is incidentally gained. The importance of this knowledge is evinced by the fact that it is the only non-professional subject which is required in most medical schools. The aim is to impart such information in Chemistry as is necessary to the intelligent physician. At the same time any who wish to pursue the study further than is required of every graduate may do so by special arrangement.

### Materia Medica and Therapeutics.

PROFESSOR WHEATLEY. }
DR. FRENCH. } *Three hours a week.*

Instruction in this department consists of lectures and recitations, three hours a week during the year. Medicines will be exhibited as far as possible. Therapeutics will receive especial attention.

The metric system will be taught, and the ability to write prescriptions in both the old and new systems will be insisted upon.

A reasonable amount of time will be devoted to the late additions to the Pharmacopœia.

### Medical Chemistry.

PROFESSOR AUSTIN. }
DR. THORPE. } *Four hours a week.*

Owing to the increased facilities afforded by the management of the school, the scope of instruction in this subject has been largely increased this year, so that now there is offered, in addition to lectures and recitations, practical work in urinalysis, including careful investigation with the microscope, analysis of bile, gastric juice, saliva, blood, and drinking water. Quantitative analysis, in so far as it pertains to these subjects, is conducted by the students in the laboratory, and the results obtained are carefully filed for future reference. Photo-micrographs have been largely used as a means of familiarizing students with the appearances of microscopic objects. The latter half of the year is devoted to toxicology, and students are required to examine poisons, not only in their pure state but mixed with organic matter; to which has been added this year the examination of various food stuffs which are commonly adulterated. At each examination a written analysis is required of a specimen of milk, urine, and a poison.

### Pathology.

PROFESSOR DUDLEY. }
DR. BROWN. } *Two hours a week.*

Instruction in this department will consist of lectures, recitations from text-book, and practical work in the laboratory. Each student, before taking an examination in Pathology, will be required to perform satisfactory laboratory work. To those students who do not possess a microscope, will be loaned one of those belonging to this department at a nominal rental.

It will be the aim to make clear the importance of a thorough knowledge of the causes, course, and results of pathological processes, giving frequent illustrations by morbid specimens.

### Surgical Pathology.

ASSISTANT PROFESSOR CUMSTON. *One hour a week.*

The course in Surgical Pathology for the school year 1896–7 will consist of a series of lectures on special subjects, and the object in view will be to afford instruction in such portions of this branch as are not contained in the ordinary text-books. So far as possible these lectures will be illustrated by pathological specimens and demonstrations.

### Bacteriology.

DR. F. B. BROWN.

This year the course in Bacteriology has been widely extended. It nows consists of sixty hours' work required from every student, including the lectures, recitations, and laboratory work devoted to the subject. The biology, cultivation, and staining of bacteria, as well as the general bacteriological technique, are especially dwelt upon, thus giving the student a good working knowledge of the subject. The more important pathogenic bacteria, as well as the favorite non-pathogenic varieties, are grown in the laboratory for illustration.

Microscopes are furnished the students at a moderate rental.

### Theory and Practice of Medicine.

PROFESSOR HALL.
DR. GRIFFIN. } *Four hours a week.*

This course consists of two lectures each week by Professor Hall, covering the whole ground of general medicine, comprising in all sixty lectures, and a thorough examination is given by the Quiz-master upon every lecture, two hours per week being devoted to this work. The didactic lectures of this course are fully exemplified by cases presented in the course of clinical medicine. It is considered necessary for the student to be well founded in the theory of medicine before taking up to any great degree the bed-side study of disease.

### Clinical Medicine.

PROFESSOR HILDRETH.
DRS. DEARING, WHITE, AND TWOMBLY. } *Two hours a week.*

Instruction in this department is given by clinical lectures, visits to the dispensary, and other exercises. Students are furnished cases and required to report upon them. Auscultation and Percussion and Laryngoscopy will be taught both theoretically and practically. The subject of diagnoses and the writing of reports of cases will also receive especial attention.

### Neurology.

PROFESSOR WEBBER. *One hour a week.*

There will be one lecture each week, during the term, upon diseases of the nervous system. As preparatory to these, there will be a brief review of the anatomy and physiology of the nervous system so far as necessary to understand the relations of the symptoms to organic changes in the nerve centers. The anatomy of the brain will be demonstrated with special reference to localization of cerebral diseases. The lectures will be both clinical and didactic, and will be illustrated by diagrams, photographs, and microscopic preparations.

### Mental Diseases.

PROFESSOR CHANNING. *One hour a week.*

Instruction in this branch will consist of a course of twelve lectures so arranged as to cover the whole subject of mental diseases. The lectures will be of a practical nature and will be adapted to the requirements of the general practitioner.

### Diseases of Children.

PROFESSOR WILLIAMS.
DRS. WHITE AND STOWELL. *Two hours a week.*

Instruction in this department consists of clinics, lectures, clinical conferences and visits to sick children at their homes. The clinical advantages offered to students in this department are very great, and examples of nearly all the affections of infancy and childhood are shown to the students, including such rare diseases as are seldom seen outside the clinics of a large city. A course of didactic lectures, including the anatomy and hygiene of infancy and childhood, is given by Dr. White, and special instruction in the auscultation and percussion of children and the contagious diseases is given by Dr. Stowell.

### Legal Medicine.

PROFESSOR DURELL. *One hour a week.*

The course in Legal Medicine consists of one lecture each week during the first term, and will include all of the subjects which are usually included under the head of medical jurisprudence, together with a thorough course in the making of medico legal autopsies, with as many practical demonstrations as possible. The duty of a physician to the Commonwealth, and his rights, both as a medical expert and as an ordinary witness, will be explained.

### Surgery.

*Three hours a week.*

The instruction given in this department will consist of lectures, recitations, demonstrations, and practical teaching upon the subject of general surgery, and will include instruction in bandaging and dressing. The details of modern antiseptic dressings, the adapting of silicate, dextrine, and plaster bandages, and the application of splints will be taught. At the end of the year a course in operative surgery is given by Assistant Professor Briggs, at which the students are required to perform the various operations upon the cadaver.

### Clinical Surgery.

PROFESSOR SMITH.
ASSISTANT PROFESSOR BRIGGS.

*Three hours a week.*

The instruction in this department will consist of one lecture a week throughout the school year, in which all the important points will be considered. These lectures will be based upon cases demonstrating the particular subject. The course will be a complete one and will include the various branches necessary to the practitioner. Etherization will be taught, and it is hoped that each student will have the opportunity of administering ether, thereby learning, by practical experience, the technique of anæsthesia. Commencing in January, there will be a series of clinical conferences at which students will present for discussion a full report of cases previously assigned. The student reporting the case will read a paper giving the diagnosis, prognosis, and treatment, and at the conclusion there will be a general discussion of the various points to be considered. Professor Smith will give clinical exercises at the City Hospital during his term of service, and the Surgical Department of the Boston Dispensary will be open for instruction every morning between 10 and 11 from October 1 to January 1; once a week from January 1 to April 1, and if further instruction is needed, arrangements will be made to continue these exercises during the balance of the term.

### Otology.

Professor Jack. }
Dr. Webster. } *Two hours a week.*

Instruction in this department will consist of lectures and clinical teaching. Clinics will be held at the Massachusetts Charitable Eye and Ear Infirmary, where nearly five thousand patients with ear disease are annually treated.

### Genito-Urinary Diseases.

Dr. Raddin.

The various diseases of the Genito-Urinary system will be considered and illustrated by cases as far as practicable.

### Diseases of the Rectum.

Drs Otis and Stedman.

Instruction in this department will be given by Drs. Otis and Stedman at the Boston Dispensary.

### Ophthalmology.

Professor Tenney. *One hour a week.*

This course will be of the most practical character possible, being designed to give the general practitioner such knowledge of the subject as is essential in his practice. The lectures, which are given once a week through the school year, will be fully illustrated by schematic representations, and again by clinical material, which is ample for that purpose.

### Laryngology.

Dr. Boardman.

Instruction in Laryngology and Rhinoscopy will be given by Dr. Boardman at the Boston Dispensary, beginning Jan. 1, 1897, and continuing until April 1. The students of the Senior class will be divided into sections, and will visit the clinic of Dr. Boardman on Tuesdays, Wednesdays, Thursdays, and Fridays of each week, where an opportunity is afforded them for studying the diagnosis and treatment of diseases of the throat and nose by actual examination of the patients. The object of the course is to give instruction in cases of this class which are liable to come under the observation of the general practitioner, such as adenoid growth, diphtheritic false membranes, syphilis, tuberculosis, etc. The subject is also illustrated by lectures and diagrams.

### Obstetrics.

PROFESSOR WASHBURN. *Three hours a week.*

Instruction in this department will consist of lectures, recitations, conferences, and clinical teaching. Lectures will be illustrated by plates and the use of the manikin. Each student will be required to care for at least two cases, clinical instruction being given with one of these, attending them throughout convalescence and handing in a written report of the same. Some of these reports will be read before the class, and subjected to discussion and criticism by class and instructor.

### Gynæcology.

PROFESSOR CUSHING. *Three hours a week.*
(DRS. GARCEAU AND COTTRELL.)

Instruction is given both by lectures and by clinical teaching. Professor Cushing lectures once each week to the Senior class, and twice weekly sub-divisions of the class receive practical instruction from Instructor Garceau. Once each week a quiz is held by Assistant Cottrell on the lectures of Dr. Cushing. Arrangements have been made by which students of the Senior class, who wish to continue their studies after graduation, may witness operations in the hospital services of Dr. Cushing.

Dr. Holden has also kindly consented to continue to give clinical instruction to a limited number of students at the Staniford Street Dispensary.

Courses of instruction are open to the students at the clinics of the Free Hospital for Women, on payment of a moderate fee.

## TEXT-BOOKS.

The first book mentioned is preferred as a text-book, the others being recommended as collateral reading.

**Anatomy**: Gray, Quain, Weisse, Holden, Morris, Cunningham's Dissector.

**Physiology**: Foster, Kirkes' Handbook (13th edition), Landois and Sterling, Martin's Human Body, Flint.

**General Chemistry**: Witthaus (last edition), Remsen's Laboratory Manual, A. H. Elliott's Qualitative Analysis.

**Histology**: Schäfer.

**Medical Chemistry**: Tyson on the Urine, Purdy, Roberts on Renal and Urinary Diseases.

**Toxicology**: Reese on Medical Jurisprudence and Toxicology, Wormley on Micro-Chemistry of Poisons.

**Materia Medica and Therapeutics**: Bartholow (8th edition), Shoemaker (3d edition), Hare, Wood, United States Dispensatory (1890), Gerrish's Prescription Writing.

**Pathology**: Greene, Warren, Ziegler.

**Bacteriology**: Woodhead, Sternberg.

**Obstetrics**: Lusk, Reynolds, Dorland, American Text-Book.

**Gynæcology**: Diseases of Women, by A. Martin, American Text-Book of Gynæcology, Pozzi.

**Surgery**: American Text-Book of Surgery, Treves, Ashurst, Wyeth.

**Practice of Medicine**: Osler, Pepper, Wood and Fitz.

**Clinical Medicine**: Osler's Practice of Medicine, Wood and Fitz, Practice, DaCosta's Medical Diagnosis, Tyson's Physical Diagnosis.

**Neurology**: Gower, Dana, Gray.

**Mental Diseases**: Cloustin, Spitzka.

**Pediatrics**: Smith's Diseases of Children, Keating's Cyclopædia of the Diseases of Children.

**Otology**: Politzer and Bennett's System of Diseases of the Ear, Throat, and Nose.

**Ophthalmology**: De Schweinitz, Nettleship, Noyes.

**Medical Dictionary**: Dunglison.

# Requirements.

## FOR ADMISSION.

### To the Freshman Class.

(1) An English composition of not less than 200 words.

(2) The translation of easy Latin prose, or evidence of a familiarity with the derivation of medical terms, and medical and pharmaceutical terminology.

(3) Higher arithmetic, including decimal and vulgar fractions and percentage.

(4) Elementary Physics. An acquaintance with the subject as treated in Avery's or Gage's work.

Students who fail in not more than two of these examinations may be enrolled as conditioned, and will be required to make up the deficiency during the session, before they can be enrolled as students in regular standing.

**Exceptions.**— No entrance examination is required of matriculates or graduates of medical, pharmaceutical, or dental colleges requiring a similar entrance examination, nor of matriculates or graduates of reputable colleges of literature, science, and the arts, nor of graduates of high or State normal schools or of institutions of similar grade. To save delay students are requested to bring their diplomas and certificates with them.

Graduates of Pharmacy may be admitted to the Freshman year and excused from General Chemistry.

### To the Second Year Class.

Students of this and other accredited medical schools who have passed a majority of the examinations of the Freshman Year, which include Descriptive Anatomy, Physiology, General Chemistry, Histology, and Hygiene, may be admitted to the Second year class.

Students of dental colleges whose standard of instruction is approved by the Faculty of this School, who have attended two full courses of lectures and passed the examinations of the Freshman year as above noted, may be admitted to the Second year class.

### To the Third Year Class.

Students of this and other accredited medical schools who have passed the examinations of the Freshman year and a majority of those of the second year, which include Applied Anatomy, Medical Chemistry and Toxicology, Materia Medica and Therapeutics, Pathology and Bacteriology, may be admitted to the Third year class.

### To the Senior Class.

Students of this and other accredited medical schools who have passed all the examinations of the Freshman and second year studies and a majority of the third year studies, which include Theory and Practice of Medicine, Surgery, Obstetrics, Gynæcology, Neurology, Pediatrics, and Mental Diseases, and graduates of other regular medical schools, may be admitted to the Senior Class.

Students must matriculate before November 1 of each year, in order to fulfil requirements of time.

## REQUIREMENTS FOR GRADUATION.

Candidates for the degree of Doctor of Medicine must fulfil the following requirements: —

They must furnish certificates that they are twenty-one years of age, and of good moral character.

They must have attended four full courses of medical lectures at some accredited medical college, the last of which shall have been at this school, and no two courses in the same twelve months.

They must have passed all the required examinations.

They must have attended two cases of obstetrics.

They must have dissected one half of the body.

The Faculty reserve the right to change these requirements from time to time without further notice.

The four-years course commenced with the class of 1900. Students from other colleges admitted to the classes of 1898 or 1899 will be subject to the requirements governing those classes.

## CLINICAL ADVANTAGES.

Boston, as the largest city in New England, offers unusual facilities to the student of medicine. The amphitheatres of the Boston City Hospital, the Massachusetts General Hospital, the Massachusetts Charitable Eye and Ear Infirmary are open to students, and opportunity is thus afforded for witnessing the more extensive surgical operations.

Clinics are held at the Boston City Hospital, the Massachusetts Eye and Ear Infirmary, and at the Boston Dispensary, which latter, as the largest medical charity in Boston (42,587 cases were treated last year), affords an unsurpassed field for familiarizing the student with the various forms of disease. Members of the medical and surgical staff are also connected with various other institutions, among which may be mentioned : the Chelsea Hospital, the Somerville Hospital, the Cambridge Hospital, the Woman's Charity Club Hospital, the Free Hospital for Women, and the Marcella St. Home, and so far as possible the material thus afforded will be utilized for the benefit of the students.

## EXAMINATIONS.

There are two examinations held each year, in the college building. They are in writing, and are held at the opening of the regular course of lectures in the fall, and at the close of the course in the spring.

The fall examinations are for

(*a*) Students commencing the study of medicine.
(*b*) Students applying for advanced standing.
(*c*) Students who failed in the spring.

The spring examinations are for promotion and graduation.

All students who intend taking any of the examinations must register their names with the Secretary on or before a date to be announced upon the bulletin.

Students who have failed twice in their examination upon a subject will not be admitted to a third examination without the payment of an extra examination fee of ten dollars.

*Freshman Year:* Descriptive Anatomy, Histology, including Embryology, Physiology, General Chemistry, and Hygiene.

*Second Year:* Applied Anatomy, Materia Medica and Therapeutics, Pathology, Medical Chemistry and Toxicology, and Bacteriology.

*Third Year:* Theory and Practice of Medicine, Surgery, Obstetrics, Pediatrics, Neurology, Gynæcology, Mental Diseases.

*Senior Year:* Clinical Medicine, Clinical Surgery, Clinical Obstetrics, Clinical Gynæcology, and two of the following elective subjects: Electro-Therapeutics, Diseases of Rectum, Genito-Urinary Surgery, Clinical Pediatrics, Legal Medicine, Ophthalmology, Otology, and Laryngology.

The examination in Bacteriology takes place immediately at the close of the course in that study.

The examination in Obstetrics is optional to students of the Middle year.

Students are eligible for their examinations as follows: those of the Freshman year at the end of first year of attendance; those of the Second year at the close of the second year's course, provided they have passed a majority of the Freshman examinations; those of the Third year at the close of the third year's course, provided they have passed all of the Freshman and a majority of the Second year examinations. Those of the Senior year at the close of the fourth year's course, provided they have passed all of the Freshman and Second year examinations, and a majority of those of the third year.

## DIVISION OF STUDIES.

For the Freshman Year.— Descriptive Anatomy, Physiology, General Chemistry, Histology and Embryology, and Hygiene.

For the Second Year.— Applied Anatomy, Medical Chemistry and Toxicology, Materia Medica and Therapeutics, Pathology and Bacteriology.

For the Third Year.— Theory and Practice of Medicine, Surgery, Obstetrics and Clinical Obstetrics, Neurology, Pediatrics, Gynæcology, and Mental Diseases.

For the Senior Year.—Clinical Medicine, Clinical Surgery, Clinical Gynæcology, Genito-Urinary Diseases, Rectal Diseases, Mental Diseases, Ophthalmology, Otology, Laryngology, Clinical Pediatrics, Electro-Therapeutics, and Legal Medicine.

## EXPENSES.

### Freshman Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Demonstrator fee | 5.00 |
| Laboratory fee | 10.00 |
| General lecture ticket | 100.00 |

### Second Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Laboratory fee | 10.00 |
| General lecture ticket | 100 00 |

### Third Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| General lecture ticket | 100.00 |

### Senior Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| General lecture ticket | 50.00 |
| Graduation fee | 30.00 |
| Ticket admitting to the four years' lectures (when paid in advance) | 300.00 |
| Instruction in a single branch | 40.00 |
| Graduates of other schools | 50.00 |
| Dissecting material | At cost. |

The matriculation fee, demonstrator fee, laboratory fees, and one half of the general lecture ticket must be paid strictly in advance at the beginning of the year, and in every case by November 1 ; the second fifty dollars on the lecture ticket is due, and must be paid on or before February 1.

No student will be allowed to attend any course of lectures without the certificate of the Bursar of the College.

The graduation fee is payable on or before the first day of May, and no student will receive a diploma from the College until the Bursar certifies that all fees or charges of any kind are settled.

The Bursar of the College will be at the Medical School for the purpose of collecting fees, a notice of the days and hours being previously posted on the bulletin board.

For the purpose of encouraging thoroughness of medical education, students now connected with the school voluntarily electing to pursue the four-years course, will be received for the fourth year at a nominal rate.

# General Information.

## LIBRARIES.

The students will have free access to the library of the new school, to the library of Tufts College, and, under certain restrictions, to the Boston Public Library, which contains a collection of over 15,000 books upon medical subjects.

## SESSIONS OF THE SCHOOL.

The annual course of lectures begins on the last Wednesday in September of each year, and continues until the last Wednesday in May.

There are no exercises at the school during the week of the Christmas vacation, nor upon Thanksgiving Day, or Patriots' Day.

The next annual course of lectures (1897–98) will commence on the last Wednesday in September, 1897, and continue until the last Wednesday in May, 1898.

## STANDING AND CERTIFICATES.

Graduates of other regular medical schools in good standing may receive the degree of this school after attending one course of lectures and passing the examinations of the Senior year. It is understood that attendance upon a course of lectures requires actual presence at a majority of the exercises of the session.

Students who do not wish a degree will be received for any portion of the course. Any student may obtain a certificate of work done during his period of connection with the school.

The expenses of living in Boston vary according to the habits and desires of students, and need not exceed those in small cities and villages. Good board, including room, fire, and light, can be obtained near the school at from $4 to $7 per week. Near the school building are several excellent boarding places charging moderate prices. Students will not be allowed to occupy rooms in the city that are not approved by the Faculty.

Requests for the Annual Announcement and all other communications relating to the business of the school should be addressed to the Secretary, CHARLES P. THAYER, M. D., 74 *Boylston Street, Boston, Mass.*

# THE BROMFIELD-PEARSON SCHOOL

# Bromfield-Pearson School.

## BOARD OF INSTRUCTION.

ELMER H. CAPEN, D. D., PRESIDENT.

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SAMUEL C. EARLE, A. M.,
*Instructor in French.*

CHARLES H. CHASE, S. B.,
*Superintendent of Shops.*

——— ———,
*Teacher of Forging.*

## STUDENTS.

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| Child, Henry C. | *Medford.* |
| Foss, James B. | *St. Albans, Vt.* |
| Marsh, Frederick C. | *Greenville, N. H.* |
| McClintock, Edward H. | *North Cambridge.* |
| Towle, Frank B. | *Norridgewock, Me.* |
| Yeaton, Herbert P. | *West Somerville.* |

# The Bromfield-Pearson School

Is a department of Tufts College, designed to provide a special course of technical instruction to such as may be qualified by previous education and maturity of mind to fit for either of the Engineering Courses of the College in one year, or to pursue with equal advantage the special two-years course of the school.

The first year may be taken as preparatory, either to the Engineering Departments of the College, or to the technical course of the school.

The course for the second year is arranged to meet the wants of those who are unable to pursue their studies for a longer period, but require the essentials of an engineering education presented in a concise and practical manner, to include elementary mathematics, mechanics, and technical drafting.

## ADVANTAGES TO BE DERIVED FROM THE COURSE.

Students may prepare for the Engineering Departments of the College in less time than by the ordinary fitting school, as it is possible to take all the mathematics of a high school course in one year, beside the necessary preparation in language.

Students who pursue the preparatory course, and complete the work satisfactorily, will be admitted to College on certificate.

Save in the elementary instruction in mathematics and English, the courses pursued are, in most respects, identical with those of the College.

Students who are partially prepared to enter the College may pursue advanced work in anticipation of their engineering studies, and thus shorten their College course.

Students who may pursue the two-years course, and later decide to enter the College, will receive full credit, by the College, for all work satisfactorily performed which may be equivalent to that required in the Engineering department.

The association with College work and College men places the student in better position to pursue his advanced studies.

The Gymnasium, Library, and Lecture courses of the College are open to students of the school.

The mechanical equipment of the school is such as to afford exceptional opportunities for pursuing the practical courses in Carpentry, Moulding, Pattern work, Forging, and Machine work.

## THE BUILDING.

The Bromfield-Pearson Building is a three-story building 100x50 ft., comprising drafting and recitation-rooms, offices, and shops, for conducting the special courses of the school, and the department of drawing and shop work in the College. The drafting-rooms are three in number, and separated from the noise and vibration of the shops. Abundant and uniform light is provided, rooms on the upper floor having large skylights on the northerly side. There is a forge, moulding, pattern, and machine shop. These are equipped with modern tools and in the most approved manner. Each student is provided with a separate bench, tools, forge, lathe, etc. A twenty-five horse-power Buckeye engine furnishes the motive power for the shop, and also serves for experimental work in the study of the steam engine. One room is set apart as a study for such of the students as do not room at the College, and others who desire to prepare their lessons at the building.

# Course of Study.

## FIRST YEAR.

### Preparatory Course.

Algebra is begun, and during the first three quarters will include quadratics, radicals, arithmetical and geometrical progression, together with the binomial theorem for positive exponents.

Geometry is begun during the first term, and continued throughout the year. The course includes plane geometry and all of solid save spherical.

Plane Trigonometry is taken during the fourth quarter.

Elementary Mechanics is pursued by the special engineering students during the second term.

English Grammar and Composition is pursued throughout the year.

French for the entire year is required of those who are preparing for a College course. Special students may elect.

Drawing (Freehand) comprises the course required for entrance to the College, together with technical sketching and lettering.

Drawing (Technical) includes the use of instruments, geometrical problems, elementary problems in projection (orthographic and isometric), tracing, blue printing, etc. Both this and the course in freehand are identical with the College course in drawing, and all (or a part) may be omitted by students fitting for College.

Descriptive Geometry may be taken by such students as are sufficiently prepared to enter the College class. This is pursued during the second term, and is required of those taking the two-years course.

Shop Work is elective, and may be taken at any time when it will not interfere with required work.

### Electives.

Those who may be sufficiently prepared in any of the above studies may elect any of the following : —

Preparation in elementary algebra, as above, will admit to course in College algebra.

Preparation in elementary algebra, plane and solid geometry, will admit to Freshman mathematics.

Preparation in elementary mechanics will admit to course in physics, consisting of lectures and laboratory work.

As the instruction in drawing is largely individual, the student may take the grade for which he is prepared.

## SECOND YEAR.

### Special Engineering Course.

This part of the course is intended only for those who do not enter the Engineering Department of the College. Students will, however, be admitted to College classes for which they may be fitted.

ADVANCED ALGEBRA AND SPHERICAL GEOMETRY are pursued with the College classes during the first term.

ANALYTICAL GEOMETRY is taken during the first term.

CALCULUS (Differential and Integral) is studied during the second term. This is elementary, and designed to give the student such a knowledge of the practical use of the science as shall enable him to read, in an intelligent manner, books involving its use.

APPLIED MECHANICS is pursued for one term, and the subjects assigned for design are such as to afford a practical application of the theory. This includes the subject of Graphic Statics.

MACHINE DRAWING. Much attention has been given to the method of presenting this work to enable the student to gain, in the shortest time, a comprehensive knowledge of the practical methods for the graphic representation of mechanical ideas. This work is conducted in precisely the same manner as in a well-organized drafting room. It consists largely of freehand sketches and plainly finished drawings, made according to the most approved systems. Each student is now provided with a time card on which a record is kept of the time employed in the execution of all drawings. It is not only necessary that drawings be well made, and accurate, but that a reasonable time be employed in their execution.

KINEMATICS. Under this head, the subjects of cams, gearing, links, etc., are treated, and much stress is laid on the practical application of the same. It is taught by means of graphic problems and lectures.

MACHINE DESIGN is begun as soon as the student has become proficient in the preceding courses, and has acquired neatness, accuracy, and rapidity of execution. He is now encouraged to think and act for himself, thereby developing his intuitive ability and self-reliance. Many of the methods used in connection with this study are believed to be original with the school, and have resulted in a great saving of the student's time.

STEAM ENGINE. A brief course in the theory of steam is pursued in connection with the problems for design of Boilers and Engines. The subject of VALVE GEARS is considered at this time. The student is also taught to apply the INDICATOR and measure the power and consumption of water. Excellent opportunities are afforded at the College for this work which is of the most practical character.

MOULDING. A short but comprehensive course in the foundry is required of all second-year students. The special object in this training is to acquaint the future designer with the methods employed in the modern foundry, and enable him to judge as to the best methods of constructing patterns. This work is of a very practical nature, consisting of the moulding of a great variety of patterns, the making of cores, and, finally, casting the more important pieces.

SURVEYING. Such practice in the use of transit and level is afforded the student as shall familiarize him with their use, and enable him to make a simple survey.

### Electives.

The following courses may be pursued in connection with the foregoing, when time and previous preparation will permit: —

PATTERN MAKING. This course includes Carpentry, Turning, Pattern Making, and Moulding. *Six hours a week (first half-year) ; three hours a week (second half-year).*

FORGING. In this short course it is designed to make the student familiar with the metals and the method of working them. The exercises include heating, bending, drawing, upsetting, welding, tempering, case hardening, etc. *Three hours a week (second half-year).*

MACHINE WORK. Vise work in iron, including surface chipping, squaring and fitting, keyseating, scraping and polishing. The machine practice consists not only in the operation of turning, planing, drilling, boring, etc., but in a careful study of the machines, their efficiency, and capabilities. *Six hours a week (second half-year).*

PHYSICS. (See, under Departments of Instruction, the College of Letters, Physics). *Three hours a week for the year.*

PHYSICAL LABORATORY. (See, under Departments of Instruction, Physics). *Six hours a week (second half-year).*

CHEMISTRY. (See, under Departments of Instruction, Chemistry). *Three hours a week for the year.*

SURVEYING. This is the regular work in Surveying for Engineering students in the Sophomore year. *Four hours a week (first half-year).*

# General Information.

## REQUIREMENTS FOR ADMISSION.

Students will be required to satisfy the instructor in charge of their ability to pursue the studies which they may elect. This may be done by certificate from a school previously attended, or by examination, oral or written, as may be deemed necessary.

In examinations, either for entrance or for advanced standing, the students are considered individually, rather than collectively, in order to give the instructor the fullest knowledge of the standing of the student, and enable the latter to take such a place in the school as shall best fit him for his future work.

## REGULATIONS OF THE SCHOOL.

Students are subject to the rules governing College students.

Prompt and regular attendance, together with a faithful performance of all duties, is required.

Polite and orderly conduct is insisted upon, and any damage to school property must be made good by the student causing it.

Students who may elect any of the subjects in the regular College courses must attain at least seventy per cent in those studies in order to remain with the class.

No change in program is permitted during the term.

Only such students are encouraged to enter as may be thoroughly in earnest, and desire to make the most of their opportunities. To such, the institution offers exceptional opportunities.

Certificates of proficiency are given the special engineering students who shall complete either of the courses comprised in one year. These certificates state the subjects which have been completed according to the requirements of the institution. No diploma is given, or degree conferred.

The tuition fee is one hundred and twenty dollars per year, payable as follows: Sixty dollars on or before the 5th of October, and the balance on or before the 15th of March.

No part of the tuition fee will be refunded to pupils who for any reason withdraw from the school before the close of the term for which the fee is paid.

Students board in commons at $3.50 per week; in private families at $3.50 to $5.00 for table board and $1.50 to $2.00 for furnished room. Other expenses vary with the economy of each student. Students living in the college dormitories furnish their own rooms.

The following estimates represent the fixed annual expenses: —

| | | |
|---|---|---|
| Tuition . . . . . . . . . . . . . . | $120.00 | $120.00 |
| Half room-rent . . . . . . . . . . | 15.00 | 75.00 |
| Care of rooms . . . . . . . . . . | 10.00 | 10.00 |
| Board, $3.50 to $5.00 a week (36 weeks) | 126.00 | 180.00 |
| Physical training . . . . . . . . . | ——— | 10.00 |
| Total . . . . . . . . . . . . | $271.00 | $395.00 |

For other information address, Gardner C. Anthony, Dean of the Bromfield-Pearson School, *Tufts College, Mass.*

# DEGREES AND HONORS

1895–96

# Fortieth Annual Commencement.

JUNE 17, 1896.

## DEGREES CONFERRED.

### Honorary.

DOCTOR OF LAWS.

THOMAS JEFFERSON SAWYER, D. D.*
MARY ASHTON LIVERMORE.

DOCTOR OF DIVINITY.

CALEB DAVIS BRADLEE.†
JOHN CLARENCE LEE.

DOCTOR OF PHILOSOPHY.

CHARLES WINFIELD PARMENTER.*
WALTER PARKER BECKWITH.

DOCTOR OF SCIENCE.

LORIN LOW DAME.*

MASTER OF ARTS.

THOMAS GODDARD FROTHINGHAM.*
STEPHEN HARDY POWELL.*
OTIS AUGUSTUS SKINNER.*

### In Course.

BACHELORS OF ARTS.

MABEL PRESCOTT BAILEY (*with Final Honors in German*).
PERCIVAL GATES BARNARD (*with Final Honors in Latin and Greek and Honorable Mention in German*).
WALTER HERMON BELCHER.
RALPH HOLBROOK CHEEVER (*with Honorable Mention in English Literature*).
JOSEPH CONGDON (*with Honorable Mention in Biology*).
ARTHUR WINFIELD DEGOOSH (*extra ordinem*).
DAVID FRANCIS DILLON.

*Degree given in 1895 but omitted from last year's Catalogue.
†Degree given in 1891 but omitted from the Catalogue of that year.

EDWARD WYMAN FICKETT (*with Final Honors in Greek and Honorable Mention in Philosophy*).
MARY GRACE FICKETT (*with Final Honors in Greek and Honorable Mention in History*).
MARY FRANCES GODDARD (*with Final Honors in German and Latin*).
CLIFFORD FOSTER HALL (*with Final Honors in Latin and Honorable Mention in Physics*).
ETHEL MUNROE HAYES.
DANIEL BAXTER HAYWARD.
HENRY WILLIAM HOLBROOK.
SIDNEY BREED JOHNSON.
CHARLES GILBERT JORDAN (*with Final Honors in Mathematics*).
GEORGE FRANCIS MAGUIRE.
REIGNOLD KENT MARVIN (*with Final Honors in Latin and Honorable Mention in English Literature*).
GERTRUDE HOLBROOKE MEACOM (*with Honorable Mention in German*).
WILLIAM ROE O'NEIL (*with Final Honors in Latin and Honorable Mention in Philosophy*).
CORA ALMA POLK (*with Honorable Mention in English Literature*).
EDWIN RUSSELL SAMPSON (*with Honorable Mention in English Literature and History*).
ORREN HENRY SMITH (*with Final Honors in English Literature and Honorable Mention in Philosophy*).
EDWIN BICKNELL STEVENS (*with Honorable Mention in History*).
JOSIAH ALBERT STOVER (*with Honorable Mention in Mathematics*).
MARIE LOUISE TIFFT (*with Final Honors in Greek and Honorable Mention in Latin*).

### BACHELOR OF SCIENCE IN CIVIL ENGINEERING.

EDWARD DANA SABINE.

### BACHELORS OF SCIENCE IN ELECTRICAL ENGINEERING.

GEORGE ARTHUR BROTHERS (*with Honorable Mention in Electricity*).
JOHN NASH IVES.
MELDON HUMPHREY MERRILL.
KONOSUKE OHATA (*with Honorable Mention in Electricity*).
LESLIE LAWRENCE PERRY (*with Final Honors in Electricity*).
GUY CLIFFORD PIERCE.
WARNER DANIEL SMITH.
HERBERT WASHBURN SYMONDS.
ARTHUR THURSTON.
CHARLES EDWARD WHITON.

### BACHELORS OF DIVINITY.

FRANK ALVAH FERGUSON.
THEODORE ADOLPH FISCHER.
HENDRIK VOSSEMA.
CHARLES MERRILL WARD.

### DOCTORS OF MEDICINE.

AVEDIS DER AVEDISIAN.
GEORGE GOODWIN AVERILL.

JAMES HENRY BARRY.
JANE HOWORTH BOWKER.
HELEN BRIGHTMAN.
WILLIAM GILBERT BROUSSEAU.
FREDERICK EMERSON CHANDLER.
JOSEPH AMEDEE CHAREST.
WILLIAM SINNOTT CUMMINGS.
JOHN INNES FRENCH.
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WILLIAM HENRY GREENE.
FRED STANLEY GRIFFIN.
WILLIAM PRIDE GROVESTEIN.
FRANK HARVEY.
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ELEANOR DORCAS POND.
WALTER HENRY RICE.
FRED HILLIARD ROBINSON.
JOHN FRANCIS RYAN.
SARA ELMINA STEVENS.
LETITIA MARIE TILTON.

### MASTERS OF ARTS.

SAMUEL WARREN MENDUM.
ORREN HENRY SMITH.
WILLIAM RISBY WHITEHORNE.

## AWARDS OF PRIZES, 1895-96.

### Goddard Prize in Latin.

Mary Eliza Evans.

### Goddard Prize in Mathematics.

Etta Frances Philbrook.

### Greenwood Prize Scholarship in Oratory.

Alaric Bertrand Start.

## Rhetorical Prizes.

*First Class** — (1) SIMEON CONANT SMITH.
(2) GRACE EVELYN GOUDEY.
*Second Class* — (1) ROLLIN BREWSTER SANFORD.
(2) WILLIS ALBERT MOORE.
*Third Class* — (1)
(2) REIGNOLD KENT MARVIN.

## Entrance Examination Prizes, 1896-97.

GRACE AGNES MASON and ETHEL LINCOLN FAY.

## Greenwood Prizes in Oratory in the Divinity School.

WILLARD STANTON SMALL, A. B., FANNIE ELMIRA AUSTIN, and ALBERT EUGENE BARTLETT.

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* The classification is based on the number of term hours done in Oratory.

# Principal Benefactors of the College.

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| Alumni, The | |
| Adams, Nathaniel | *Boston.* |
| Arnold, Olney | *Pawtucket, R. I.* |
| Abbott, Benjamin | *Boston.* |
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| West, William P. | *Halifax, N. S.* |
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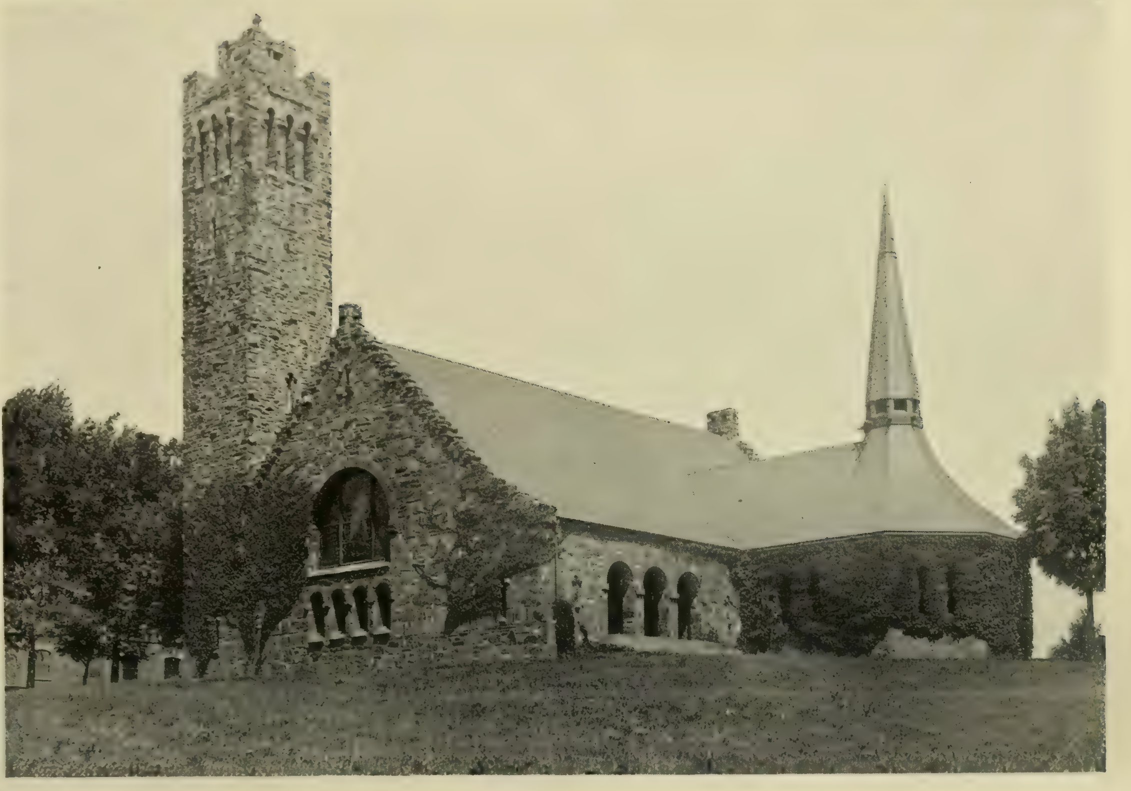

GODDARD CHAPEL.

# CATALOGUE

OF

# TUFTS COLLEGE

1897-98

BOSTON:
THE BARTA PRESS,
144 AND 148 HIGH STREET,
1898.

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# Calendar.

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## 1897.

| | | |
|---|---|---|
| SEPT. | 16. | College year begins (all departments except the Medical School), Thursday morning. |
| SEPT. | 19. | Russell Lecture, Sunday, 10.30 A. M. |
| NOV. | 24. | Thanksgiving recess begins, Wednesday at 1 P. M. |
| NOV. | 28. | Thanksgiving recess ends, Sunday evening. |
| DEC. | 22. | Christmas recess begins, Wednesday at 1 P. M. |

## 1898.

| | | |
|---|---|---|
| JAN. | 5. | Christmas recess ends, Wednesday evening. |
| FEB. | 5. | End of first half-year, Saturday. Plans of study for the second half-year must be reported before noon of this day. |
| FEB. | 7. | Second half-year begins, Monday. |
| APRIL | 2. | Spring recess begins, Saturday at 1 P. M. |
| APRIL | 10. | Spring recess ends, Sunday evening. |
| MAY | 20. | Prize Reading in the College of Letters, Friday. |
| MAY | 31. | Prize Reading in the Divinity School, Tuesday. |
| JUNE | 10. | Class Day, Friday. |
| JUNE | 12. | Baccalaureate Sermon, Sunday, 4.30 P. M. |
| JUNE | 15. | Forty-second Annual Commencement, Wednesday. |

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*First Examinations for Admission to the College of Letters.*

| | | |
|---|---|---|
| JUNE | 16. | Algebra, 9 to 10.30 A. M. |
| | | English, 10.30 A. M. to 12.30 P. M. |
| | | Plane Geometry, 2 to 4 P. M. |
| | | Physics, 4 to 5 P. M. |
| | | Drawing, 4 to 6 P. M. |
| JUNE | 17. | Elementary and Advanced Latin, 9 to 12 A. M. |
| | | Advanced Mathematics, 9 to 11 A. M. |
| | | Natural History (two subjects), 11 A. M. to 1 P. M. |
| | | History, 2 to 4 P. M. |
| | | Chemistry, 4 to 5 P. M. |
| JUNE | 18. | Elementary and Advanced Greek, 9 to 12 A. M. |
| | | Intermediate or Advanced German or French, 9 to 11 A. M. |
| | | Elementary German and French, 11 A. M. to 12.30 P. M. |

## Summer Vacation, Fourteen Weeks.

### *Second Examinations for Admission to College of Letters.*

| | | |
|---|---|---|
| Sept. | 20. | Algebra, 9 to 10.30 A. M. |
| | | English, 10.30 A. M. to 12.30 P. M. |
| | | Plane Geometry, 2 to 4 P. M. |
| | | Drawing, 4 to 6 P. M. |
| Sept. | 21. | Elementary and Advanced Latin, 9 to 12 A. M. |
| | | Advanced Mathematics, 9 to 11 A. M. |
| | | Natural History (two subjects), 11 A. M. to 1 P. M. |
| | | History, 2 to 4 P. M. |
| Sept. | 22. | Elementary and Advanced Greek, 9 to 12 A. M. |
| | | Intermediate or Advanced German or French, 9 to 11 A. M. |
| | | Elementary German and French, 11 A. M. to 12.30 P. M. |
| | | Physics, 2 to 3 P. M. |
| | | Chemistry, 3 to 4 P. M. |

| | | |
|---|---|---|
| Sept. | 21. | Examination for Admission to the Divinity School in Miner Hall, beginning at 9 A. M. |
| Sept. | 22. | College year begins, Thursday morning. |
| | | Registration of all students at Secretary's office. |
| | | Major departments and plans of study for the first half-year must be reported before noon of this day. |
| Sept. | 24. | Regular College exercises begin. |
| Sept. | 25. | Russell Lecture, Sunday, 10.30 A. M. |
| Dec. | 21. | Christmas recess begins, Wednesday evening. |

### 1899.

| | | |
|---|---|---|
| Jan. | 4. | Christmas recess ends, Wednesday evening. |
| Feb. | 4. | End of first half-year, Saturday. |
| Feb. | 6. | Second half-year begins, Monday. |

Tufts College is a railway station four miles from Boston, on the Southern division of the Boston & Maine Railroad. The post-office address is — Tufts College, Mass.

# Historical Sketch.

TUFTS COLLEGE was founded under a charter granted on the twenty-first day of April, 1852, by the General Court of Massachusetts. Under this charter, as later amended, the College is empowered "to confer such degrees as are usually conferred by colleges in New England." Its organization now comprises the College of Letters, the Divinity School, and the Medical School. The College of Letters gives the degrees of Bachelor of Arts, Bachelor of Philosophy, and for special courses in science and engineering that of Bachelor of Science; and the graduate degrees of Master of Arts, Doctor of Philosophy, Civil, Electrical, and Mechanical Engineer. The course in the Divinity School leads to the degree of Bachelor of Divinity, that in the Medical School to the degree of Doctor of Medicine.

The movement resulting in the founding of the College was set on foot in 1847, through the efforts of the Rev. Thomas J. Sawyer, of New York, the Rev. Hosea Ballou, 2d, of Medford, and the Rev. Thomas Whittemore, of Cambridgeport. After much consideration the work of raising a fund of one hundred thousand dollars for a foundation was undertaken, under the direction of the Rev. Otis A. Skinner, of Boston. About sixty thousand dollars was obtained in money. Sylvanus Packard gave his bond for twenty thousand dollars additional, and Charles Tufts gave twenty acres of land on Walnut Hill, embracing the present site of the College. Mr. Tufts announced his intention of increasing his gift of land to more than one hundred acres, and thus became the largest benefactor of the young institution, which accordingly received his name. Mr. Packard was a Boston merchant, who from the beginning made the College a peculiar care, and bequeathed to it his entire fortune. Among other benefactors associated with those who may be styled the founders of the College, were Oliver Dean, who gave it ninety thousand dollars, and Thomas A. Goddard, whose gifts, though unobtrusive, were constant, and whose widow has continued the generosity of her husband. Dr. William J. Walker came soon after, with gifts and bequests amounting to nearly three hundred thousand dollars.

While the College, as may be seen, owed its beginning to the effort and the support of members of the Universalist denomination, it was provided by the legislature in the charter that

> "No instructor in said college shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges, honors, or degrees of said college, on account of the religious opinions he may entertain."

This provision has always been interpreted by the Trustees and Faculty in its broadest sense. The non-sectarian character of the work of the College is amply shown by the membership of its Faculty and student body. The truth, and not the maintenance of any religious or political doctrine, has been the aim of its research and its instruction.

Students were first formally admitted in 1855. The only building at that time was the main College building, now known as Ballou Hall. The next building to be erected was a small brick dormitory, now the Library building. The large dormitory known as East Hall was the next addition to the group, and in 1872 West Hall was opened to students. It was ten years before building operations were renewed by the College. The original Faculty numbered five. The first class, of three members, graduated in 1857.

At the outset, provision was made for a course of study leading to the degree of Bachelor of Arts. The only feature of its work peculiar to Tufts College in these years of its beginnings was the attention given to the study of history. The first President of the College, the Rev. Hosea Ballou, 2d, D. D., was likewise Professor of History and of Intellectual Philosophy, and gave instruction in history remarkable alike for its quantity and quality, at a time when the study was hardly recognized in American colleges. Four hours a week for three years was the time assigned to this subject in the curriculum of Tufts College, until the death of President Ballou, in 1861, when, there being no one to take up the work, it dropped from the course.

Dr. Ballou was succeeded in the presidency by the Rev. Alonzo Ames Miner, D. D., LL. D., who was inaugurated in 1862, and continued in office until 1875, resigning in February of that year. In March, 1875, the Rev. Elmer Hewitt Capen, D. D., was elected to the Presidency of the College, vacated by the resignation of President Miner, and he was inaugurated on the second day of June.

Some unclassified students had always been in attendance at the College, and in 1866 the degree of Bachelor of Philosophy was offered to those who should pursue a prescribed course of two years, the object being to provide for those who had been prepared only in English subjects. This course was maintained until 1875, when it was changed to a course of four years. The requirements for admission were then made the same as for the regular course, except that Greek as a condition of entrance was omitted, and an amount of work in French or German, considerably less than its equivalent, was substituted.

The will of Mr. Packard required that a professor of Christian Theology should be maintained from the income of funds bequeathed by him. The Rev. Thomas J. Sawyer, D. D., was elected Packard Professor in 1869. This was the beginning of the Divinity School. In 1882 the school had developed so that its Faculty received a definite organization and Dr. Sawyer became the first Dean, retaining the office until his retirement as Packard Professor Emeritus in 1892. He was succeeded by the present Dean, the Rev. Charles H. Leonard, D. D. From the erection of West Hall until the completion of the separate buildings of the school, the western side of West Hall was occupied by the Divinity School. In 1892, by the gift of ex-President Miner, the school was provided with a convenient and handsome building, Miner Hall, containing the library, class-rooms, chapel, and reception-room; and at the same time, largely through the efforts of the Dean of the School, the money was obtained to build Paige Hall, a dormitory for students of the Divinity School.

The Engineering courses were begun in 1869 with a department of Civil Engineering. The great development of electrical science was promptly recognized, and a department of Electrical Engineering was opened to students in 1882, a professorship in the subject being established in 1890. This side of the College work had a very rapid development, and in 1894 the field was broadened by the addition of a course in Mechanical Engineering. In these courses an effort has always been made to give thorough practical training. The will of the late Henry B. Pearson, founding the Bromfield-Pearson School, and putting it in the hands of the Trustees of Tufts College to administer, provided a thoroughly equipped building for technical instruction, of great value in the drawing, pattern-making, machine, and forge work, so important to the engineer in any branch. The Bromfield-Pearson building was completed in the fall of 1894.

In 1883 the late Phineas T. Barnum gave fifty-five thousand dollars for the establishment of the Barnum Museum of Natural History, and by his last will he bequeathed forty thousand dollars more. The main Museum building was completed in 1884. The west wing, containing the new biological laboratories, was erected in 1894. The years 1882 and 1883 saw the completion of the Goddard Chapel, a monument of architectural beauty, given by Mrs. Mary T. Goddard as a memorial of her husband, the first treasurer of the College. The Goddard Gymnasium, a gift from the same source, was also completed in 1883. Dean Hall, a new dormitory, made necessary by the growth of the College, was erected in 1887 from funds bequeathed by the late Oliver Dean. In the College year 1894–95 two new buildings were opened in addition to the west wing of the Barnum Museum. These were the Chemical Building and Commons Hall, containing students' rooms, a dining hall, and the post-office.

The development of the College in its internal life has, however, been the notable fact of the last few years, of which the external changes have been the indications. In 1891 a new course of study, leading to the degree of Bachelor of Arts, was offered for the first time, with an entrance requirement, believed to be fully the equivalent of the Greek, in two modern languages. This was one important step taken by the College towards the broadening of its opportunities, but it soon proved to be insufficient. There had been a steady growth for many years in the amount of work done and in the number of departments of learning represented. Instead of five members of the corps of instruction, as at the opening of the College in 1855, the catalogue of 1893–94 showed a body of active instructors, exclusive of the Divinity and Medical Schools, numbering twenty-seven, and offering subjects aggregating one hundred and thirteen, divided among twenty-two departments, exclusive of the Engineering Courses proper. Two new departments had been instituted in 1892, in response to the tendencies of educational development — Biology and History. In the fall of 1893 it seemed possible to take another step and to put in operation the present plan of work, which is believed to be an approach to a rational coordination and connection of the college and university systems. The beneficial results, in the growth of a more earnest and scholarly spirit, have already been felt. The same principle which governed this adjustment of the College curriculum has been applied to the new entrance requirements which appear in this catalogue, and will go into full effect in 1899.

There were opened in 1895 courses of four years each in Biology, Chemistry, General Science, and Medical Preparatory work, leading to the degree of Bachelor of Science, and accessible to graduates of all good high schools. These new courses open broad opportunities to graduates of schools, not fitting especially for college, to secure a thorough college training. Bachelors of Philosophy may, if they desire, go on to the attainment of the degree of Bachelor of Arts.

In response to a pressing demand the College was, in the summer of 1892, opened to women on the same terms as to men. Nine women registered in all departments in that year. In the fall of 1894 there was opened for the accommodation of women students Metcalf Hall, the gift of Mr. Albert Metcalf, of Newton. The admission of women to the College was followed a year later by the opening of the Tufts College Medical School. The school has graduated three classes and has enjoyed substantial growth in the number of its students and in its facilities for work.

## THE COLLEGE CHARTER.

Section 1. B. B. Mussey, Timothy Cotting, Richard Frothingham, Jr., their associates and successors, are hereby constituted a body corporate by the name of the Trustees of Tufts College, in Medford, and they and their successors, and such as shall be duly elected members of said corporation, shall be and remain a body corporate by that name forever. And for the orderly conducting of the business of said corporation, the said Trustees shall have power and authority, from time to time, as occasion may require, to elect a President, Vice-President, Secretary, and Treasurer, and such other officers of said corporation as may be found necessary, and to declare the duties and tenures of their respective offices; and also to remove any Trustee from the same corporation, when, in their judgment, he shall be rendered incapable, by age or otherwise, of discharging the duties of his office, or shall neglect or refuse to perform the same; and, also, from time to time, to elect new members of the said corporation; provided, nevertheless, that the number of members shall never be greater than thirty.

Section 2. The said corporation shall have full power and authority to determine at what times and places their meetings shall be holden, and the manner of notifying the Trustees to convene at such meetings, and also, from time to time, to elect a President of said College, and such professors, tutors, instructors, and other officers of the said College, as they shall judge most for the interest thereof, and to determine the duties, salaries, emoluments, responsibilities, and tenures of their several offices. And the said corporation are further empowered to purchase or erect, and keep in repair, such houses and other buildings as they shall judge necessary for the said College; and also to make and ordain, as occasion may require, reasonable rules, orders, and by-laws, not repugnant to the Constitution and Laws of this Commonwealth, with reasonable penalties, for the good government of the said College, and for the regulation of their own body, and also to determine and regulate the course of instruction in said College, and to confer such degrees as are usually conferred by colleges in New England; provided, nevertheless, that no corporate business shall be transacted at any meeting unless one third, at least, of the Trustees are present.

SECTION 3. The said corporation may have a common seal, which they may alter or renew at their pleasure, and all deeds sealed with the seal of said corporation, and signed by their order, shall, when made in their corporate name, be considered in law as the deeds of said corporation; and said corporation may sue and be sued in all actions, real, personal, or mixed; and may prosecute the same to final judgment and execution by the name of the Trustees of Tufts College; and said corporation shall be capable of taking and holding in fee simple, or any less estate, by gift, grant, bequest, devise, or otherwise, any lands, tenements, or other estate, real or personal; provided, that the clear annual income of the same shall not exceed two hundred thousand dollars.

SECTION 4. The clear rents and profits of all the estate, real and personal, of which the said corporation shall be seized and possessed, shall be appropriated to the endowment of said College in such manner as shall most effectually promote virtue and piety, and learning in such of the languages, and of the liberal and useful arts and sciences, as shall be recommended from time to time by the said corporation, they conforming to the will of any donor or donors in the application of any estate which may be given, devised, or bequeathed, for any particular object connected with the College.

SECTION 5. No instructor in said College shall ever be required by the Trustees to profess any particular religious opinions as a test of office, and no student shall be refused admission to or denied any of the privileges, honors, or degrees of said College, on account of the religious opinions he may entertain.

SECTION 6. The Legislature of this Commonwealth may grant any further powers to, or alter, limit, annul, or restrain, any of the powers vested by this act in the said corporation, as shall be found necessary to promote the best interests of the said College, and more especially may appoint and establish overseers or visitors of the said College, with all necessary powers for the better aid, preservation, and government thereof.

SECTION 7. The granting of this Charter shall never be considered as any pledge on the part of the Government that pecuniary aid shall hereafter be granted to the College.

# REGISTER

OF

# TUFTS COLLEGE

1897-98

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---

* The members of the Faculty with the exception of the President are arranged in this list in the order of the time at which their first academic degrees were taken, or the time of their studies, where an academic degree was not taken in course.

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THOMAS WHITTEMORE, A. B., 372 Massachusetts Ave., Cambridge.
*Instructor in English.*

FRANK G. WREN, A. M., West Hall, 4.
*Walker Special Instructor in Mathematics.*

CHARLES C. STROUD, A. B., Dean Hall, 1.
*Instructor in Physical Training.*

VIRGIL L. LEIGHTON, A. M., PH. D., Dean Hall, 9.
*Instructor in Organic Chemistry.*

TIMOTHY LEARY, M. D., Hotel Langham, Boston.
*Assistant Professor of Pathology and Instructor in Bacteriology.*

CHARLES H. CHASE, S. B., Stoneham.
*Instructor in Shopwork.*

## LECTURERS, ASSISTANTS, AND OTHERS.

### College of Letters.

CHARLES G. JORDAN, A. B., West Hall, 28.
*Assistant in Mathematics.*

SAMUEL C. EARLE, A. M., Franklin Street, Somerville.
*Assistant in English Literature.*

WILLIAM R. WHITEHORNE, A. M., 14 Elmwood St., Somerville.
*Assistant in Assaying.*

GEORGE F. BAMPTON, A. B.
*Assistant in General Chemistry.*

WALLACE HUMPHREY GRAVES.
*Assistant in Qualitative Analysis and General Chemistry.*

ERNEST T. FLUEGEL, PH. D., 93 Sawyer Ave., Dorchester.
*Assistant in Modern Languages.*

LIZZIE MAUD CARVILL, Metcalf Hall, 14.
*Instructor in Physical Training for Women.*

CHARLES S. MOSES, East Hall, 21.
*Assistant in Gymnasium.*

### Medical School.

WILLIAM R. WOODBURY, A. B., M. D., 164 Newbury St., Boston.
*Lecturer on Hygiene, and Instructor in Nervous Diseases.*

WALTER J. OTIS, M. D., 267 Beacon Street, Boston.
*Lecturer on Rectal Diseases.*

WILLIAM S. BOARDMAN, A. B., M. D., 57 Hancock St., Boston.
*Lecturer on Laryngology.*

GEORGE A. BATES, D. D. S., Auburndale.
*Lecturer on Histology.*

CHARLES D. KNOWLTON, M. D., 18 Hancock Street, Boston.
*Demonstrator of Anatomy.*

THOMAS F. GREENE, M. D., 316 Warren Street, Roxbury.
*Assistant Demonstrator of Anatomy.*

EUGENE THAYER, A. B., M. D., 2683 Washington Street, Boston.
*Assistant Demonstrator of Anatomy.*

JOHN I. FRENCH, M. D., 2A Park Street, Boston.
*Assistant in Materia Medica and Therapeutics.*

JAMES C. D. CLARK, M. D., Salem St., Medford.
*Assistant in the Theory and Practice of Medicine.*

### Divinity School.

FREDERIC W. HAMILTON, A. M., Roxbury.
*Lecturer on Christian Economics.*

CHARLES R. TENNEY, B. D., Roxbury.
*Lecturer on Character and the Ministry.*

EDWARD L. HOUGHTON, A. M., Pawtucket, R. I.
*Lecturer on the Historical Origin of Christianity.*

HENRY BLANCHARD, A. M., D. D., Portland, Maine.
*Lecturer on the Study of the Old Testament.*

## OTHER OFFICERS.

HARRY GRAY CHASE, B. E. E., 16 Professors Row.
*Registrar.*

HELEN L. MELLEN, 126 Packard Avenue.
*Librarian.*

ETHEL MUNROE HAYES, A. B., 252 Medford St., Somerville.
*Assistant Librarian.*

JOHN P. MARSHALL, A. M., 48 Professors Row.
*Director of the Museum.*

CHARLES C. STROUD, A. B., Dean Hall, 1.
*Director of the Gymnasium.*

WILLIAM R. WOODBURY, A. B., M. D., 164 Newbury St., Boston.
*Medical Director of the Gymnasium.*

CHARLES R. GRAY, Medford.
*Superintendent of Buildings.*

### Proctors.

HERBERT E. CUSHMAN, West Hall, West.
FRANK G. WREN, West Hall, East.
VIRGIL L. LEIGHTON, Dean Hall.
FRED D. LAMBERT, East Hall.

## TUFTS COLLEGE STUDIES.

### Board of Editors.

THE PRESIDENT, *Ex-Officio.*

——— ———. Professor Dolbear.
Professor Knight. Professor Kingsley.

# Students.*

## GRADUATE DEPARTMENT.

### Fellows.

LAMBERT, FRED DAYTON . . *Muscatine, Iowa* . East Hall, 8.
*Ph. D.*, 1897. *Instructor in Biology, Olmstead Fellow in Natural History.*

WILLARD, WILLIAM ALBERT . *Grinnell, Iowa* . . East Hall, 8.
*B. S.*, 1895, *Iowa College. Miner Fellow in Natural History. First Year. Biology.*

### Resident Students.

Bampton, George Frederick . *Boston* . . . 36 Cushing Ave.
*A. B.*, *Denver University*, 1897. *First Year. Chemistry.*

Ruddick, William Henderson *So. Boston* . . 502 E. Broadway.
*M. D.*, *Harvard*, 1868. *B. A. S.*, *Harvard*, 1881. *First Year. Biology.*

Whitehorne, William Risby . *Somerville* . . 14 Elmwood St.
*A. B.*, 1895. *Third Year Chemistry.*

Winslow, Guy Munroe . . *Barton Landing, Vt.* 105 Porter St.,
*A. B.*, 1895. *Third Year. Biology.* Somerville.

## COURSES IN ARTS AND SCIENCES.

In the following list the course pursued by each student is indicated by the italic letters immediately following the name. The abbreviations are as follows: Courses leading to the degree of A. B., *a b;* to the degree of Ph. B., *ph.;* to the degree of S. B., — in Civil Engineering, *c e;* in Electrical Engineering, *e e;* in Mechanical Engineering, *m e;* and in the first two years of the Engineering Courses, before the differentiation of studies, *e;* to the degree of S. B., through the Science Courses, — in General Science, *sc;* in Biology, *bi;* in Chemistry, *ch;* and Medical Preparatory, *m p.*

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* The right-hand column contains the college residence of every student having such residence, the neighboring cities of Somerville and Medford being thus included. The middle column records the home address.

## Senior Class.

| | | |
|---|---|---|
| Ahern, George Edward, *c e* | *Arlington* | Middle Hall, 5. |
| Anderson, Malcolm Campbell, *a b*, | *W. Somerville*, | 18 Farragut Ave. |
| Andrews, Herbert Woodbury, *e e* | *Lynn* | East Hall, 26. |
| Arnold, John Emerson, *a b* | *Braintree* | Δ Υ House. |
| Bartlett, Ethel Townsend, *a b*, | *Somerville* | 113 Highland Ave. |
| Boomer, Perley Eugene, *a b*, | *9 Oakland Ave., Everett.* | |
| Burbank, Ralph Lyman, *ch* | *Medford* | West Hall, 25. |
| Capen, Samuel Paul, *a b* | *Tufts College* | 8 Professors Row. |
| Carvill, Lizzie Maud, *a b* | *Somerville* | Metcalf Hall, 14. |
| Cousens, John Albert, *a b* | *Brookline* | 12 Dean Hall. |
| Daniels, George Emory, *a b* | *Franklin* | Dean Hall, 9. |
| Donaldson, James Frank, *a b*, | *Salem* | West Hall, 28. |
| Evans, Mary Eliza, *a b* | 16 *Wright St., Stoneham.* | |
| Flint, Marion Lenore, *a b* | *Spring St., Bedford.* | |
| French, Edmund Merritt, *c e*, | *W. Hingham* | East Hall, 26. |
| Gifford, Frances Crocker, *a b* | *Provincetown* | Metcalf Hall, 6. |
| Grant, Beatrice Alexandra, *a b*, | 29 *Pleasant St., Woburn.* | |
| Graves, Wallace Humphrey, *ch*, | *Bangor, Me.* | |
| Hammond, Roland, Jr., *a b* | *Brockton* | West Hall, 22. |
| Harwood, George Alec., *c e* | *Cambridge* | West Hall, 2. |
| Johnson, Edward Dunbar, *a b*, | *Methuen* | Θ Δ Χ House. |
| Jones, Guy Edward, *e e* | *Marlow, N. H.* | 26 East Hall. |
| Jones, Willie Parker, *a b* | *Stoneham* | West Hall, 24. |
| Maddocks, John Arthur, *c e* | *Boothbay Harbor, Me.* | 2 Dean Hall. |
| May, Benjamin Dexter, *a b* | *Hudson* | Δ Τ Δ House. |
| Moore, Willis Albert, *a b* | *Somerville* | 12 Mt. Pleasant Ave. |
| Parke, Robert Hayward, *e e* | *Monson* | West Hall, 2. |
| Patterson, Walter Arthur, *e e*, | *Waltham* | West Hall, 11. |
| Perkins, Llewellyn Rood, *e e* | *So. Woodstock, Vt.* | East Hall, 34. |
| Peirce, Frank Lincoln, *a b* | *Brimfield* | Δ Υ House. |
| Ransom, Clara, *a b* | *Tufts College* | 80 Professors Row. |
| Ransom, William Richard, *a b*, | *Tufts College* | 80 Professors Row. |
| Russell, James Porter, *a b* | *Farmington, Me.* | Δ Υ House. |
| Schoolfield, Frank Robert, *e e*, | *Tufts College* | East Hall, 1. |
| Shaw, Edwin Adams, *c e* | *W. Somerville* | 18 Bellingham St. |
| Small, Sylvanus Griswold, *a b*, | *Baldwinville* | 36 Emery Street. |
| Smith, Simeon Conant, *a b* | *Provincetown* | Δ Τ Δ House. |
| Stebbins, Katherine Louise, *a b*, | *W. Somerville* | 30 Day Street. |
| Sweet, Harold Edward, *a b* | *Attleboro* | Δ Υ House. |
| Titus, Anson Merrill, *c e* | *W. Somerville* | 10 Raymond Ave. |
| Tousey, Coleman, *a b* | *Tufts College* | 106 Professors Row. |
| Town, Frederic Edward, *e e* | *Washington, D. C.* | Θ Δ Χ House. |
| Welch, Walter Frederick, *a b*, | *Stoneham* | East Hall, 29. |

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|---|---|---|
| Wells, Roy Titus, *e e* | *Foxboro* | Δ Υ House. |
| Whitman, Walter George, *a b*, | *Norway, Me.* | East Hall, 14. |

## Junior Class.

| | | |
|---|---|---|
| Bartlett, Lewis, *e* | *Marblehead* | East Hall, 11. |
| Bean, Charles Alvin, *a b* | *Hudson* | Δ Τ Δ House. |
| Bradbury, Fannie Eliza, *a b* | *Milford* | Metcalf Hall, 3. |
| Brightman, Carl Gordon, *e* | *Round Pond, Me.*, | East Hall, 14. |
| Buck, Lula Adine Howe, *a b* | *Medford* | 45 Chester Ave. |
| Buss, Arthur Stacey, *c e* | *Medford* | East Hall, 20. |
| Carleton, Grace Willis, *a b* | *Wakefield* | Metcalf Hall, 2. |
| Carpenter, Edwin King, *a b* | *West Medford* | West Hall, 24. |
| Clough, Harry Wescott, *a b* | *Lowell* | Δ Τ Δ House. |
| Cogswell, Lena Rice, *a b* | *Gardner* | 26 Conwell Ave., West Somerville. |
| Cooper, Orville, *e e* | *Pictou, Can.* | 23 Ware St., West Somerville. |
| Cousens, Kate Elizabeth, *a b*, | *Brookline* | Metcalf Hall, 12. |
| Cowan, Frank Joseph, *a b* | *Farmington, Me.* | East Hall, 12. |
| Crowley, Daniel Francis, *c e* | *Medford.* | |
| Cutler, Augustus Leon, *e e* | *Wakefield* | West Hall, 5. |
| Davis, Mervin Nathaniel, *e e* | *Haverhill* | East Hall, 10. |
| Doane, Ernest Stanley, *ph* | *Marblehead* | Δ Υ House. |
| Eveleth, Charles Wonson, *m p*, | *Marblehead* | West Hall, 6. |
| Forster, George Fleming, *a b*, | *Lawrence* | Δ Υ House. |
| Gage, Isaac Bradlee, *a b* | *W. Medford* | Dean Hall, 13. |
| Gibson, Elbert Eugene, *e e* | *Cherry Valley, Can.* | East Hall, 16. |
| Goudey, Grace Evelyn, *a b* | 53 *Buckman Street*, *Everett.* | |
| Griswold, Fred Fay, *c e* | *So. Manchester, Conn.* | East Hall, 5. |
| Howe, Frank Merrill, *a b* | *So. Weymouth* | East Hall, 23. |
| Hunter, Leslie Erastus, *e e* | *Essex Junction, Vt.* | East Hall, 32. |
| Kent, Ira Rich, *a b* | *Calais, Vt.* | Θ Δ Χ House. |
| Knight, Isabella Gertrude, *a b.* | *Tufts College* | 114 Professors Row |
| Knowlton, Frank Warren, *a b*, | *New Bedford* | West Hall, 19. |
| Lane, Grace Harvey, *a b* | 165 *Brooks Street, W. Medford.* | |
| Lawrence, Bertha Faustina, *bi*, | *Stowe* | Metcalf Hall, 13. |
| Lewis, Florence May, *a b* | *Main Street, Stoneham.* | |
| Litchfield, Harry Livingston, *e* | *Fitchburg* | West Hall, 27. |
| Lovering, Frank Woods, *sc* | *W. Medford* | Dean Hall, 13. |
| Mange, John Isaac, *e e* | *Kingston* | East Hall, 4. |
| Marble, Ernest Gilman, *c e* | *Methuen* | West Hall, 23. |
| Mason, William Madison, *ch* | *Washington, D. C.*, | West Hall, 19. |
| Morton, George Fisher, *bi* | *W. Somerville* | 53 Hall Avenue. |
| Morton, Anna Lucy, *sc* | *W. Somerville* | 53 Hall Avenue. |

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| Nichols, Arvilla Florence, *a b*, | *Somerville* | 505 Broadway. |
| Olmsted, Elmer Sheridan, *e e*, | *Somerville* | East Hall, 6. |
| Philbrook, Etta Frances, *a b*, | 85 *Ferry St.*, *Everett.* | |
| Rand, Charles Henry, *e e* | *Waltham* | West Hall, 2. |
| Rich, Edward Wellington, *a b*, | *West Acton* | West Hall, 27. |
| Richardson, Herbert Hay, *a b*, | *Stoneham* | East Hall, 17. |
| Smith, Forster Hanson, *a b* | *Lowell* | West Hall, 32. |
| Sturtevant, Morton Adams, *a b*, | *Stoneham* | West Hall, 12. |
| Trow, Harris Cushman, *e e* | *Kingston* | East Hall, 23. |
| Vincent, Shelley Davis, *a b* | *Tufts College* | West Hall, 12. |
| Wallace, John Eugene, *e e* | *Waterloo, P. Q., Can.*, | East Hall, 5. |
| Watson, Clara Eva, *a b* | *Nashua, N. H.* | Metcalf Hall, 5. |
| White, Helen Ridler, *a b* | *Pawtucket, R. I.*, | Metcalf Hall, 11. |
| Whitney, Arthur Bryant, *a b*, | *Milford* | Dean Hall, 9. |
| Yeaton, Mary Frances, *a b* | 22 *Pond St.*, *Stoneham.* | |

## Sophomore Class.

| | | |
|---|---|---|
| Allison, Fannie Gage, *a b* | 50 *Winn St.*, *Woburn.* | 38 Capen Street, Medford Hillside. |
| Andrews, Charles Masson, *sc*, | *Newtonville* | Δ Υ House. |
| Anthony, Madge Agnes, *a b* | *Adams* | Metcalf Hall, 6. |
| Atkinson, Martha Louise, *a b*, | *Laconia, N. H.* | Metcalf Hall, 4. |
| Barron, Elmer Walter, *a b* | *Charlestown* | West Hall, 18. |
| Bellows, Louisa Jane, *a b* | *Spencer* | Metcalf Hall, 4. |
| Burton, Charles Ernest, *e* | *Somerville* | East Hall, 16. |
| Brown, Louis Raymond, *a b* | *Putnam, Conn.* | East Hall, 33. |
| Burkett, Helen Loretta, *a b* | *Somerville* | 85 Mt. Vernon St. |
| Burrage, Elizabeth Theresa, *a b*, | *Somerville* | 20 Dartmouth St. |
| Chadwick, Henri Francis, *e*, | *Marion* | East Hall, 30. |
| Chase, Fred Marcellus, *ph* | *Newtonville* | West Hall, 16. |
| Clapp, Albert Lewis, *ch* | *Marblehead* | West Hall, 3. |
| Clark, Carrie Lois, *ph* | *W. Brattleboro, Vt.*, | Metcalf Hall, 8. |
| Clark, George Appleton, *a b* | *Somerville* | 49 Brastow Ave. |
| Clark, John Putnam, *a b* | *Jamaica Plain* | Θ Δ Χ House. |
| Conn, Wallace Thompson, *ch*, | *Woburn* | East Hall, 25. |
| Cushman, Clarence Alphonso, *ph*, | *Somerville* | Dean Hall, 11. |
| Daniels, Ora George, *a b* | *Chelsea* | Dean Hall, 2. |
| Davis, Ethel, *ph* | *Yarmouthport* | Metcalf Hall, 9. |
| Day, Mary Grace, *ph* | *Hinsdale, N. H.* | 26 Conwell Ave. |
| Dearborn, Luther Gould, Jr., *a b*, | 169 *Sycamore St.*, *Somerville.* | |
| Emerson, Jason Draper, *a b* | 60 *Garland St.*, *Everett.* | Dean Hall, 7. |
| Fay, Ethel Lincoln, *a b* | *Tufts College* | 92 Professors Row |
| Gage, Lucy Helen, *a b* | 38 *Capen St.* | Medford Hillside. |
| Griffiths, Willis Wentworth, *e*, | *Medford* | East Hall, 6. |

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|---|---|---|
| Griswold, Fred Fay, *e* | *So. Manchester*, *Conn.* | East Hall, 5. |
| Hall, Samuel Thomas, *e* | *Sharon* | East Hall, 20. |
| Harmon, Ethel Bryant, *a b* | *Tufts College* | Prof. Harmon's. |
| Hart, Lester Stanley, *a b* | *Adams* | East Hall, 33. |
| Haynes, Lewis Henry, *e* | *Newtonville* | East Hall, 24. |
| Heath, George Byron, *ph* | *Calais, Me.* | West Hall, 7. |
| Hildreth, Guy Augustus, *a b* | *Gardiner, Me.* | Dean Hall, 7. |
| Hill, Adella Richards, *a b* | *Somerville* | 22 Grand View Ave. |
| Holmes, Harry Emery, *e* | *Medford* | East Hall, 6. |
| Hunting, Ethel Parker, *a b* | *Somerville* | 47 Vinal Ave. |
| Ingalls, Mary Anna, *a b* | *Auburn, Me.* | 15 Mt. Pleasant Ave. |
| Ingalls, Nowell, *a b* | *Swampscott* | Dean Hall, 6. |
| Kendall, Ralph Talbot, *e* | *Portland, Me.* | Dean Hall, 1. |
| Kirkpatrick, Charles Darrow, *e*, | *Charlestown* | East Hall, 29. |
| Lamb, Arthur Beckett, *a b* | *Attleboro* | East Hall, 19. |
| Lamb, Roland Manchester, *a b*, | *Attleboro* | East Hall, 19. |
| Lane, Elizabeth Caldwell, *a b*, | 165 *Brooks St.*, *West Medford.* | |
| Lovell, Ernest Mills, *e* | *Wayland.* | |
| Marvin, Charles Remington, *a b*, | *Roxbury* | West Hall, 25. |
| Marsh, Frederick Charles, *e* | *Greenville, N. H.*, | West Hall, 9. |
| McDuffee, Edgar Jerome, *e* | *Bellows Falls, Vt.*, | West Hall, 10. |
| Meader, Edgar Keene, *m p* | *Marblehead* | West Hall, 7. |
| Parker, Laurence Houghton, *a b*, | *Newtonville* | Δ Υ House. |
| Pettengill, Clarence Albert, *ch*, | *Hudson* | Dean Hall, 11. |
| Phipps, Ross Elliot, *e* | *Watertown* | Δ Υ House. |
| Raby, John William, *e* | *So. Manchester*, *Conn.*, | East Hall, 10. |
| Rand, Charles Henry, *e* | *Waltham* | West Hall, 2. |
| Restall, Charles Henry, *e* | 38 *Carmel St.*, *Chelsea.* | |
| Root, Francis Solomon, *e* | *East Douglass* | East Hall, 15. |
| Shipman, Margaret Maude, *ph*, | *Lewistown, Mont.*, | 101 Talbot Ave. |
| Smith, William Boulay, Jr., *e*, | *New Bedford* | East Hall, 22. |
| Spaulding, Alice Howard, *a b*, | *Somerville* | 10 Putnam St. |
| Spaulding, Ernest Leonard, *a b*, | *Jaffrey, N. H.* | 11 William Street, Somerville. |
| Spooner, Harriet Maria, *a b* | *Hinsdale, N. H.*, | 26 Conwell Ave. |
| Tarbox, Carl Clifton, *a b* | *Biddeford, Me.* | Δ Τ Δ House. |
| Thomas, Irving B., *a b* | *So. Manchester*, *Conn.*, | East Hall, 5. |
| Tousey, Ruth, *a b* | *Tufts College* | 106 Professors Row. |
| Tuttle, Charles Percy, *ph* | *Wakefield* | West Hall, 12. |
| Wagner, Robert Edward, *e* | *Provincetown* | East Hall, 24. |
| Waterman, Harry Oliver, *a b* | *Jamaica Plain* | Dean Hall, 5. |
| Wiley, Harry Farrington, *a b*, | *Peabody* | East Hall, 4. |
| White, Abbie Park, *a b* | *Taunton* | Metcalf Hall, 7. |

## Freshmen.

| | | |
|---|---|---|
| Abbott, Stephen Edward, *e* | *Andover* | Middle Hall, 12. |
| Almeida, Edward Mackay, de, *ph*, | *Somerville* | West Hall, 9. |
| Armstrong, Roger Wellington, *a b*, | *Waltham* | Dean Hall, 8. |
| Armstrong, Sara Mitchell, *a b*, | *Everett* | 32 Buckman St. |
| Bacon, Arthur Belmont, *e* | *Worcester* | Dean Hall, 10. |
| Berry, Joseph Francis, *ph* | *Mattapan* | West Hall, 22. |
| Boutelle, Arthur Maynard, *a b*, | *Townshend, Vt.* | West Hall, 16½. |
| Brackett, Lila Winnifred, *a b*, | *Roxbury* | Metcalf Hall, 7. |
| Browne, Annie Marguerite, *a b*, | 13 *Winslow Ave.*, | *W. Somerville.* |
| Bush, Arthur Dermont, *ph* | *Townsend.* | |
| Butler, Josiah, *e* | *Lowell* | East Hall, 28. |
| Cabot, Harry Dwight, *a b* | *Newtonville* | Δ Υ House. |
| Chilson, Dean Leroy, *e* | *Franklin* | East Hall, 13. |
| Collins, Lester Wright, *e* | *Meriden, Conn.* | East Hall, 2. |
| Conway, Bessie Adele, *ph* | *East Somerville* | 37 Flint Street. |
| Cook, Helen Adelaide, *ph* | *Arlington* | 379 Massachusetts Avenue. |
| Cullen, Margaret Vivian, *ph* | *Somerville* | 9 Rush Street. |
| Day, Francis Adams, *ph* | *Fitchburg* | West Hall, 29. |
| Derrick, George William, *bi* | *Cambridgeport* | West Hall, 31. |
| Dodge, Bertha Alma, *a b* | *Brattleboro, Vt.* | 26 Conwell Ave., W. Somerville. |
| Dodge, Carrie Gould, *ph* | *Orleans* | Metcalf Hall, 9. |
| Druley, Elmer Morey | *Stafford, Conn.* | East Hall, 9. |
| Eriksson, August Isidor, *a b*, | *Lawrence* | East Hall, 21. |
| Farrell, Ellen Frances, *a b* | *Somerville* | 27 Austin Street. |
| Foster, Kingsbery, *a b* | *Derby Line, Vt.* | West Hall, 25. |
| Frost, Jennie Clifton, *a b* | *Arlington* | 58 Old Mystic St. |
| Goodell, Robert Edward, *e* | *Lowell* | East Hall, 25. |
| Greul, Wilmer Herman, *e* | *Waltham* | East Hall, 31. |
| Hawes, Austin Foster, *a b* | *Somerville* | East Hall, 27. |
| Hawley, Dexter Reynolds, *e* | *Waltham* | West Hall, 29. |
| Hayford, Frank Leslie, *ph* | *Barre, Vt.* | West Hall, 14. |
| Hazelton, Willard Carpenter, *e*, | *Strafford, Vt.* | Dean Hall, 9. |
| Huested, Alfred Pomfret, *e* | *Albany, N. Y.* | West Hall, 30. |
| Humes, Wesley Goodrich, *ph*, | *Fitchburg* | West Hall, 23. |
| Jenkins, Meritt, *ph* | *North Weymouth*, | Dean Hall, 14. |
| Joy, William Macy, *e* | *Meriden, Conn.* | East Hall, 2. |
| Kempton, George Rutherford, *e*, | *Albany, N. Y.* | West Hall, 30. |
| Kimball, Arthur Russell, *sc* | *Haverhill* | Dean Hall, 10. |
| Kinne, Edith Buffum, *a b* | *Woodsville, N. H.*, | Curtis Street. |
| Kittridge, Gertrude Althea, *a b*, | 16 *Norwood St.*, | *Everett.* |
| Locke, William Lorenzo, *e* | *Watertown* | East Hall, 16. |

| | | |
|---|---|---|
| Knight, Gertrude, *a b* | *Tufts College* | 114 Professors Row. |
| MacQuinn, Marion Putnam, *a b*, | *Wakefield* | Metcalf Hall, C. |
| Mason, Grace Agnes, *a b* | *West Somerville*, | 5 Mason Ave. |
| Moses, Charles Sibley | *Westboro* | East Hall, 21. |
| Mulliken, William Emery, *a b*, | *Somerville* | 39 Dartmouth St. |
| Murphy, Louis Sutliffe, *ch* | *Somerville* | West Hall, 9. |
| Perham, Bertha Annah, *a b* | *Somerville* | 22 Marshall St. |
| Perkins, Estella Eugene Sigourney, *a b* | 18 *Charles St., Wakefield.* | |
| Pierce, Leslie D., *ph* | *Rochester, Vt.* | West Hall, 21. |
| Pipe, Monica Glassbon, *ph* | *West Somerville*, | 75 Wallace Street. |
| Platts, Cora Emerson, *ph* | *Orange* | 16 Professors Row. |
| Polk, Ellery Channing, *a b* | *Towanda, Pa.* | West Hall, 14. |
| Price, William Hyde, *a b* | *Jamestown, N. Y.*, | East Hall, 13. |
| Ramsey, Helen Mabel, *a b* | *Medford* | 17 Hillside Road. |
| Reed, Ethel Gardner, *ph* | *Tufts College.* | |
| Regan, William Martin, *a b* | *Fall River* | West Hall, 11. |
| Rines, Mary Alice, *a b* | *South Berwick, Me.*, | Metcalf Hall. |
| Rollins, Edwin Butler, *e* | *Westbrook, Me.* | East Hall, 11. |
| Ruddick, William A., *sc* | *South Boston* | Dean Hall, 3. |
| Ryan, Anna Imelda, *a b* | *Waltham* | 274 School Street. |
| Sayles, Christine, *a b* | *Adams* | 16 Professors Row. |
| Seede, John Augustine, *e* | *Lowell* | 777 Central Street. |
| Shearer, Edith May, *ph* | *Somerville* | 33 Belmont St. |
| Sibley, Julius Russell, *a b* | *Spencer* | Dean Hall, 14. |
| Smith, Reginald Forster, *a b*, | *Lowell* | West Hall, 32. |
| Spofford, George Rawson, *e* | *Hudson* | West Hall, 13. |
| Starbuck, Amber Angelia, *sc*, | *Turner's Falls* | Metcalf Hall, A. |
| Taylor, Elizabeth French, *a b*, | *Nashua, N. H.* | 72 Professors Row. |
| Thomas, Ralph Danford, *e* | *Portland, Me.* | West Hall, 1. |
| Tolman, Charlotte Adelaide, *a b*, | *Medford* | 23 Everett Street. |
| Turner, Harry Chester, *ph* | *Tufts College* | West Hall, 28. |
| Tuttle, Lewis Cole, *ph* | *Needham* | West Hall, 1. |
| Walker, Clarence Doane, *e* | *Stafford Springs, Conn.*, | East Hall, 9. |
| Wells, Leslie Custer, *ph* | *Foxboro* | Δ Υ House. |
| Woodward, Albert Sewell, *a b*, | *Stoneham* | West Hall, 13. |
| Wright, Bertha Louise, *ph* | *Somerville* | Metcalf Hall, 15. |
| Wyman, Walter Forestus, *ph*, | *Hyde Park* | West Hall, 8. |

## Special Students.

In the following list the Roman numeral indicates the year of attendance; the italicized department name is that of the student's major department; and the following subjects are those taken by the student for the current year. Abbreviations: Astron., Astronomy; Biol., Biology; Chem., Chemistry; Civ. Engin., Civil Engineering;

Draw., Drawing; Elec., Electricity; Elec. Lab., Electrical Laboratory; El. Mech., Elements of Mechanism; Eng., English; Eng. Lit., English Literature; Geol., Geology; Germ., German; Hist., History; Math., Mathematics; Mech., Mechanics; Mech. Engin., Mechanical Engineering; Phil., Philosophy.

Allen, Charles Rollin, Jr. . *Barre, Vt.* . . West Hall, 15.
III. *Math.* Topog., Elec., Elec. Lab., St. Engin., Qual. Anal., Eng. Lit. 1, Hydraulics.

Allison, Irnie . . . . . . . *Cherokee, Iowa* . Metcalf Hall, 15.
I. *Eng.* Math. 1, Eng. Lit. 2, Phys. 1, Phil. 1.

Avery, William Yale . . . *Providenee, R. I.*
II. *Elec. Eng.*

Baker, Alice H. . . . . . . *Tufts College.*
I. *Music.* Music 1.

Bartlett, Alice Mae . . . *No. New Portland, Me.* Metcalf Hall, 16.
III. *Math.* Biol. 2, Chem. 1, Germ. 1.

Benedict, Frank Howe . . *Williamstown, Vt.* West Hall, 16.
I. *Latin.* Eng. 1, Eng. Lit. 1, 2, Math. 1, Phil. 1a.

Bennett, George Warren . . *Monson* . . . . West Hall, 31.
I. *Eng.* Germ. 1, Phys. 1, Biol. 2, Draw., Hist. 1.

Blaisdell, Albert Chester . . *North Woburn* . 921 Main St.
I. *Eng.* Chem. 1, Math. 1, Fr. 2, Germ. 1, Phys. 1, Phys. Tr.

Brown, Elizabeth C. . . . 167 *Elm St., W. Somerville.*
II. *Eng. Lit.* Eng. 2, Or. 1, Phys. 1, Eng. Lit. 5, 9.

Brown, Luther Ainsley . . *Lynn* . . . . . Middle Hall, 8.
II. *Biol.* Chem. 2, Biol. 3, Germ. 3, Eng. 2, Fr. 2.

Burrage, John Otis, *e e* . . *Lowell* . . . . . East Hall, 28.
II. *Elec. Eng.* Anal. Geom., Mach. Draw., Elem. Mech., Phys. 1, Chem. 1, Survey.

Coughlin, Frank William . *Lowell* . . . . . . East Hall, 15.
II. *Math.* An. Geom., Rhet., Mach. Drawing, El. Mech., Phys. 1, Survey., Fr. 3.

Cummings, Allen . . . . *Woburn* . . . . . East Hall, 18.
II. *Civ. Engin.* Fr. 3, Phys. 1, Survey., Topog., Steam, Qual. Anal., Rhet.

Eaton, Minnie Laurette . . *Tufts College.*
I. *Music.* Music 1.

Gallivan, James Francis 58 *Dracut St., Dorchester.* Dean Hall, 4.
I. *Biol.* Germ. 1, Fr. 2, Phys. 1, Biol. 2, Draw., Phys. Tr.

Goss, James Herbert . . . 165 *Pleasant St., Marblehead.*
I. *Phil.* Fr. 3, Germ. 1, Phys. 1, Hist. 1, Eng. 1, Or. 1a., Alg.

Kelley, Annie G. . . . . . . *Cambridge.*
I. *Music.* Music 1.

Kingsbury, Walter Warren . *Walpole, N. H.* . . Δ Υ House.
II. *Biol.* Fr. 1, Biol. 3, Eng. 1, Chem. 1, Eng. Lit. 1, Math. 3, Phil. 1.

Lord, Edith M. . . . . . . *Needham.*
I. *Music.* Music 1.

Proctor, Florence Bidwell . 54 *Spring St.*, *Somerville.*
I. *Germ.* Germ. 3, Fr. 2, Eng. Comp., Eng. Lit. 1, Ethics, Hist. 1.

Rice, Nina May . . . . . . *Marlboro* 120 *Curtis St.*, *W. Somerville.*
I. *Eng. Lit.* Eng. Lit. 1, 2, Fr. 1, Eng. 1, Mus. 1.

Robinson, George Nelson . . *Winchester* . . East Hall, 29.
IV. *Elec. Engin.* App. Mech. Draw., Pol. Econ., Hyd., Dif. Equa., Elec., Elec. Lab., Calc.

Row, Arthur William . . . *Fairmount St.*, *Medford Hillside.*
I. *Eng. Lit.* Eng. 1, 2, Eng. Lit. 1, 2, Hist. 1, Pol. Econ., Or. 1.

Thompson, Walter Frank . *Plymouth* . . . Dean Hall, 5.
II. (Buchtel Coll. 1894–96). *Pol. Science.* Eng. 5, 8, Fr. 1, Phil. 1, Phys. 1, Pol. Sci. 5, Hist. 1.

Turner, Harriette Alice . . *Tufts College* . Metcalf Hall.
III. *Eng. Lit.* Eng. Lit. 5, Mus 2, Phys. 1.

Turner, J. Warren . . . . *Arlington Heights.*
I. *Music.* Music 1.

West, William Clough . . . *Concord, N. H.* . East Hall, 7.
I. *Eng.* Fr. 3, Germ. 1, Phys. 1, Chem. 1, Eng. 1, Hist. 1.

Williams, Harriet J. . . . *West Somerville.*
I. *Music.* Music 1.

Wilson, Stanley Calef . . . *Washington, Vt.* . West Hall, 15.
I.

Yamaguchi, Funi . . . . *Tokio, Japan* . . 22 Bellevue St, Medford Hillside.
I. *Biol.* Chem. 1, Math. 1, Germ., Biol. 1, Phys. 1.

## DIVINITY SCHOOL.

### Senior Class.

Austin, Fannie Elmina . . *Akron, O.* . . . . 37 Sawyer Ave.
Ball, Dwight Ambrose . . *Bellows Falls, Vt.*, Paige Hall, 31.
Barney, Edward Mitchell . *Lynn* . . . . Paige Hall, 18.

| | | |
|---|---|---|
| Boivin, Bertram D. | *Hinsdale, N. H.* | Paige Hall, 30. |
| Eaton, Clarence Livingstone,<br>A. B., 1895. | *Tufts College* | 18 Talbot Ave. |
| Mathew, Tacy<br>A. B., Buchtel College, 1894. | *Wilmington, O.* | 37 Sawyer Ave. |
| Milton, Lucy Almira | *Waverley* | 37 Sawyer Ave. |
| Reifsnider, Edson | *Chicago, Ill.* | 37 Sawyer Ave. |
| Rouillard, Harry Enoch | *Hinsdale, N. H.* | Paige Hall, 6. |
| Taylor, William John<br>B. S., Univ. of Minnesota, 1895. | *Minneapolis, Minn.* | Paige Hall, 7. |

## Middle Class.

| | | |
|---|---|---|
| Cheever, Ralph Holbrook<br>A. B., 1896. | *Portsmouth, N. H.* | Paige Hall, 19. |
| Marvin, Reignold Kent<br>A. B., 1896. | *Roxbury* | Paige Hall, 24. |
| Patterson, Charles Franklin | *Medford* | 12 Maple Ave. |
| Petty, Charles Ellsworth<br>A. B., Buchtel College, 1896. | *Akron, O.* | 37 Sawyer Ave. |
| Powell, Hannah Jewett | *Clinton, Me.* | 424 Medford St., Somerville. |

## Junior Class.

| | | |
|---|---|---|
| Chase, Clarence Augustine<br>A. B., Bates College, 1884. | *Auburn, Me.* | Paige Hall, 17. |
| Lewis, Lester Lothrop | *Providence, R. I.* | Paige Hall, 5. |
| Pennoyer, Charles Henry | *No. Hatley, Quebec* | Paige Hall, 29. |
| Spear, Stanley Gates | *Hartland, Vt.* | Paige Hall, 32. |

## Sub-Junior Class.

| | | |
|---|---|---|
| Allen, Pliny Arunah, Jr. | *Mattapoisett* | Paige Hall, 13. |
| Myers, Charles N. | *Detroit, Mich.* | 20 Crocker St., Somerville. |

## Special Students.

| | | |
|---|---|---|
| Bock, Sarah Malinda<br>A. B., Wellesley, 1891. | *Roxbury* | 24 Mall St. |
| Kimball, Frances Augusta | *Poland, Me.* | 424 Medford St., Somerville. |
| Miller, Chester Gore | *Pasadena, Cal.* | Paige Hall, 20. |
| Perkins, Oliver Howard | *W. Kennebunk, Me.* | Paige Hall, 15. |

## MEDICAL SCHOOL.

### Seniors.

| | |
|---|---|
| Baker, Lewis Forrester, Ph. G. | *Wollaston.* |
| Beal, Herman Alaric | *Mattapan.* |
| Berg, Tekla Amalia Josefina | *Sweden.* |
| Bertrand, Alexis Evariste | *Lowell.* |
| Boetzkes, Walter Edward | *New York City.* |
| Bowens, Bruce Tucker | *Wilmington, N. C.* |
| Burgess, Charles James | *Lawrence.* |
| Cain, Maude Florence, Ph. G. | *Springfield.* |
| Caisse, George Emile | *Lowell.* |
| Caulfield, George Beresford | *Boston.* |
| Clarkson, Thomas Carbarns | *Coatbridge, Scotland.* |
| Corbett, Francis Alfred | *Boston.* |
| Cote, Honore Joseph | *Boston.* |
| Crittenden, Harrison Murray | *Haverhill.* |
| Crowley, Ambrose, M. D. | *Cambridge.* |
| Dalton, Henry | *Paterson, N. J.* |
| Davis, Winnifred Puffer | *Fort Madison, Iowa.* |
| Dow, David Crooker | *Cambridge.* |
| Flower, Richard Charles, Jr. | *Boston.* |
| Flynn, John Ed. Leo | *Cambridge.* |
| Frost, Flora Eva | *Granby.* |
| Gehris, Oscar Thompson, A. B. | *Fleetwood, Penn.* |
| Gilbert, Frank Leslie | *Boston.* |
| Gillan, William Frederick Aloysius | *Pawtucket, R. I.* |
| von Groll, Maximilian Charles, Ph. G., | *Boston.* |
| Hall, Walter Davis | *Medford.* |
| Hamblen, Edward Everett | *Bedford* |
| Haynes, Henry Willis | *New York City.* |
| Heaton, Thomas Henry | *Cambridgeport.* |
| Herrick, Florence Adelaide | *Cambridgeport.* |
| Hinckley, James William | *Boston.* |
| Hodgdon, Luther Albion | *Roslindale.* |
| Holland, William Timothy | *Winchester.* |
| Holmes, Luke Melvin | *New Haven, Conn.* |
| Holt, Anne Prosser | *Los Angeles, Cal.* |
| Howe, Joseph D. | *Pittsfield.* |
| Judkins, Anna Gertrude | *Boston.* |
| Lane, Frank Ellsworth | *Cambridgeport.* |
| Kelley, Joseph Henry Hart | *Charlestown.* |
| Libby, Mary Gordon | *Boston.* |
| Lilly, Thomas Eugene | *Lawrence.* |
| Lloyd, Cyrus Decker | *Boston.* |

| | |
|---|---|
| Lockwood, Charles Edwin | *Binghamton, N. Y.* |
| MacNeil, Bernard Chester | *Boston.* |
| Martin, John Brayton | *Newtonville.* |
| Mayers, John Edward | *South Boston.* |
| McIntosh, Elizabeth Ellard | *Bedford.* |
| Meek, Edith R. E. | *Fall River.* |
| Merrill, Stephen Douglass | *Boston.* |
| Minard, Ralph W. | *Boston.* |
| North, Carrie | *Goshen, Conn.* |
| Petluck, Joseph | *Boston.* |
| Reid, Eustace Palmer | *Somerset, N. S.* |
| Rich, Herbert Lowell, Ph. B. | *Newton.* |
| Rowley, Mary Wellington | *Boston.* |
| Ryan, George Whitehouse | *Dorchester.* |
| Santosuosso, Joseph | *Boston.* |
| Schofield, Otho Lester | *Black River, N. S.* |
| Simpson, Joseph | *Hartford, Conn.* |
| Siske, Harry Edward | *Palmer.* |
| Slack, Francis Hervey | *No. Abington.* |
| Smith, Alfred Charles, Ph. G. | *Everett.* |
| Stevens, Ruey Bartlett | *Roslindale.* |
| Stodder, Charles William | *Roxbury.* |
| Street, Lionel Alexander Burnet | *Boston.* |
| Strong, Frederick Finch | *Boston.* |
| Stroud, Charles Crawford, A. B. | *Tufts College.* |
| Tanner, John Charles, M. D. | *So. Manchester, Conn.* |
| Tavernier, William Joseph | *Boston.* |
| Thompson, Peter Hunter | *Boston.* |
| Truworthy, Harry Leslie | *Newport, Me.* |
| Whipple, Albert Lawrence, M. D. | *Lynn.* |
| Whipple, Frank Lewis, M. D. | *Hamilton.* |
| Wilson, Almira Janette | *Boston.* |
| Wood, Mary Anna | *Pittsfield.* |
| Woodhead, Raynor | *Pawtucket, R. I.* |
| Young, Emma Elizabeth | *Acton, Me.* |

## Juniors.

| | |
|---|---|
| Foster, Harry Ruffie | *Chelsea.* |
| Gay, William Frederick, D. M. D. | *Roxbury.* |
| Harding, Walter Allen | *Skowhegan, Me.* |
| Harris, Sylvia Fowler | *Berkeley, Cal.* |
| Nunn, Etta Kimball | *Boston.* |
| Symonds, Alice Gertrude | *Boston.* |
| Webber, Sarah Southworth | *West Newton.* |

## Sophomores.

| | |
|---|---|
| Angus, Charles Robert | *Cambridgeport.* |
| Bartlett, Philip Challis | *Amesbury.* |
| Coriat, Isador Harry | *Boston.* |
| Cushing, Adelaide Olga | *Boston.* |
| Doherty, James Michael | *Providence, R. I.* |
| Doucett, Frederick Luke | *Stoneham.* |
| Dunbar, Frank Herbert | *Mansfield.* |
| Forster, Robert William | *Lawrence.* |
| Gleason, Patrick Sebastian | *Waltham.* |
| Goodrich, Harriet Rawson, B. S. | *Salem.* |
| Gray, Alice Maude | *Dorchester.* |
| Greene, Eva Keith | *Malden.* |
| Hamblen, Howard | *Somerville.* |
| Hannaford, Charles William | *Portsmouth, N. H* |
| Hara, Edward Benedict | *Allston.* |
| Hayes, Wentworth Larrabee | *Gardiner, Me.* |
| Howe, Winfred Lewis | *Cambridge.* |
| Hughes, George Frederick | *Somerville.* |
| Hyde, Ida H., B. S., Ph. D. | *Cambridge.* |
| Journeay, Warren William | *Boston.* |
| Keir, James William | *East Boston.* |
| King, Arthur Wight | *Hyde Park.* |
| Lewis, Marion | *Jamaica Plain.* |
| Lindquist, Carl Augustus | *Brockton.* |
| Lowell, Hannah | *Auburn, Me.* |
| Lowney, John Francis | *Fall River.* |
| Maney, John Joseph | *Methuen.* |
| McLean, Norman Thomas, Ph. D. | *Charlestown.* |
| McLeod, Scott | *Boston.* |
| McNamara, John James | *Brockton.* |
| Miles, Mary Ina | *Burlington, Vt.* |
| Norton, George Edward, Ph. G. | *Cambridge.* |
| Nutt, Walter Elwyn | *West Derry, N. H* |
| Osborne, Arthur Decatur, A. B. | *Somerville.* |
| Packard, Charles Herbert, Ph. G. | *East Boston.* |
| Patch, Jennie June | *Boston.* |
| Pease, Charles Valentine | *Dorchester.* |
| Pike, Winfred Carle | *Portland, Me.* |
| Pollard, Ella May | *Ashland, N. H* |
| Price, Oscar Jay | *Milton.* |
| Richardson, Francis Allen, A. B., S. B. | *Cambridge.* |
| Sheldon, Albert James, D. V. S. | *Boston.* |
| Small, Guy Darwin | *Stoneham.* |

| | |
|---|---|
| Smeltzer, James Finlay | *Boston.* |
| Stewartson, Charlotte Dodd | *Manchester, N. H.* |
| Swan, Leon Garland | *Lawrence.* |
| Weil, Edna Helen | *Boston.* |
| Williams, Charles E. | *Charlestown.* |
| Woods, Helen Augusta | *Ayer.* |
| Woodworth, John Dawson Roswell | *Jamaica Plain.* |
| Yarashefsky, Mark Henry | *Woonsocket, R. I.* |

## Freshmen.

| | |
|---|---|
| Alexander, Mattie Lena | *South Boston.* |
| Ash, Thomas Francis | *North Weymouth.* |
| Aymar, Lucy Frances | *Medford.* |
| Bean, Fred Warren | *Bethlehem, N. H.* |
| Beddall, Albert Richard | *Chelsea.* |
| Blaine, Walter Edward | *Fairhaven.* |
| Bolton, David Albert | *Somerville.* |
| Boynton, Henry Bullard | *West Townsend.* |
| Brehaut, William Albert | *Boston.* |
| Cheever, John Howard | *Portsmouth, N. H.* |
| Christie, Samuel Abraham | *South Acton.* |
| Clement, Merton Wallace | *Boston.* |
| Cogan, Thomas Francis | *Lynn.* |
| Connor, Justin Joseph | *Cambridge.* |
| Curran, Simon Francis | *Dorchester.* |
| Currier, Richard Doe | *Hudson.* |
| Dacey, Cornelius J. | *Boston.* |
| Dadmun, Eliza Josephine | *Boston.* |
| Doogue, Luke J. | *Boston.* |
| Duckering, Florence West | *Dorchester.* |
| Durgin, Edward Chase | *East Andover, N. H.* |
| Dyes, Ira Everett | *Parrsboro, N. S.* |
| Fitzpatrick, John Joseph | *Charlestown.* |
| Fraser, Louis Hornby | *Pictou, N. S.* |
| Geary, John Edward | *Brookline.* |
| Gilman, Florence | *Braintree.* |
| Gosnell, James Burchall | *Charlestown.* |
| Goddu, Joseph Rosalio | *Winchester.* |
| Grandison, Wilfred George | *Charlestown.* |
| Graham, William Joseph | *Lawrence.* |
| Haggart, Alice Gertrude | *Boston.* |
| Hale, Robert Carlton | *Boston.* |
| Harriman, Tim G. | *Hampton, Iowa.* |
| Hayes, Blanche Adelyn | *Groveton, N. H.* |

| | |
|---|---|
| Hayward, Harrison Henry | *Randolph, Vt.* |
| Hobart, Emma Miles | *West Hingham.* |
| Holmes, Burton N. | *Belmont.* |
| Hurley, Daniel Breen | *Boston.* |
| Ingraham, Amanda Elizabeth | *Cambridge.* |
| Killory, George Leo | *East Weymouth.* |
| Kirby, William Walter | *Providence, R. I.* |
| Knapp, Henry Clinton | *South Boston.* |
| Leahy, James Percy | *Middleboro.* |
| Leslie, Frank Elliot | *Woburn.* |
| Lougee, William Wallace | *Boston.* |
| Lovell, Harriet Jane | *Boston.* |
| Maccallum, Wallace | *Dorchester.* |
| McDonald, Frederick Cornelius | *Roxbury.* |
| McGahan, John Harvey | *Waltham.* |
| McKee, George | *Brighton.* |
| Middleton, Willis Johnson | *Waverley.* |
| Moore, Henry Nelson | *Boston.* |
| Myers, Laura T. | *Boston.* |
| Nelligan, John Patrick | *Cambridge.* |
| Nelson, Charles Lawrence | *South Boston.* |
| Obear, Marion H. | *Wellesley.* |
| O'Brien, Joseph Jeremiah | *Dorchester.* |
| Orr, Jane | *Boston.* |
| Paine, Louisa | *Providence, R. I.* |
| Parker, Albert Munro | *Boston.* |
| Pastene, Albert Angelo | *Boston.* |
| Quigley, John Antonio | *Malden.* |
| Rand, Angelo Walter | *Raleigh, N. C.* |
| Reilly, Lincoln Leonard | *Malden.* |
| Rundlett, David Livingston | *Boston.* |
| Shea, Alfred Drake | *Cambridge.* |
| Stickney, Whitman Gibson | *East Brownfield, M* |
| Thyng, Cora Hannah | *Laconia, N. H.* |
| Trower, Arthur Henry | *South Boston.* |
| Walch, Clinton Elbra | *Providence, R. I.* |
| Whitman, William Dutcher | *Malden.* |
| Williams, Hubert Joseph | *Boston.* |

## Special Students.

| | |
|---|---|
| Borden, Albert Grant | *Boston.* |
| Livingston, Isabel C. R. | *Lynn.* |
| McDonough, J. Harold | *Boston.* |
| McKay, Malcolm, Ph. G. | *Chelsea.* |

| | |
|---|---|
| Merrill, Quincy Heald | *Milford, N. H.* |
| Shapira, Rose Elia | *Cambridge.* |

## Resident Graduates.

| | |
|---|---|
| Cummings, William Sinnott, M. D. | *Boston.* |
| Howland, Edgar Joseph, M. D. | *Somerville.* |
| Hughes, Laura Ann Cleophas, M. D. | *Boston.* |
| McGee, Fannie Maria, M. D. | *Waban.* |
| Riley, Elizabeth Angela, M. D. | *Chelsea.* |
| Shisler, William Henry, M. D. | *Fort Erie, Ontario.* |

# Summary.

## Corps of Instruction.

| | | |
|---|---|---|
| Emeritus | | 2 |
| Professors | 34 | |
| Assistant Professors | 8 | |
| Instructors | 25 | |
| Lecturers | 8 | |
| Assistants | 13 | |
| | — | |
| Total engaged in work of instruction | 88 | |

## Students.

| | | |
|---|---|---|
| COLLEGE OF LETTERS: | | |
| Graduate | 6 | |
| Senior | 45 | |
| Junior | 53 | |
| Sophomore | 68 | |
| Freshman | 78 | |
| Special | 30 | |
| | — | 280 |
| DIVINITY SCHOOL: | | |
| Senior | 10 | |
| Middle | 5 | |
| Junior | 4 | |
| Sub-junior | 2 | |
| Special | 4 | |
| | — | 25 |
| MEDICAL SCHOOL: | | |
| Senior | 77 | |
| Junior | 7 | |
| Sophomore | 51 | |
| Freshman | 72 | |
| Special | 6 | |
| Graduates | 6 | |
| | — | 219 |
| Bromfield-Pearson School | | 6 |
| | | — |
| TOTAL NUMBER OF STUDENTS | | 530 |

# THE COLLEGE OF LETTERS

# Faculty of the College of Letters.

ELMER H. CAPEN, D. D., PRESIDENT.
*Professor of Moral Philosophy and Political Economy.*
JOHN P. MARSHALL, A. M., DEAN.
*Pearson Professor of Geology and Mineralogy.*
JEROME SCHNEIDER, PH. D.
*Professor of the Greek Language and Literature.*
BENJAMIN G. BROWN, A. M.
*Walker Professor of Mathematics.*
WILLIAM R. SHIPMAN, D. D.
*Goldthwaite Professor of Rhetoric, and Professor of Logic.*
CHARLES D. BRAY, C. E., A. M.
*Professor of Civil and Mechanical Engineering.*
AMOS E. DOLBEAR, M. E., PH. D.
*Professor of Physics and Astronomy.*
CHARLES E. FAY, A. M.
*Wade Professor of Modern Languages.*
J. STERLING KINGSLEY, S. D.
*Professor of Biology.*
WILLIAM L. HOOPER, A. M.
*Professor of Electrical Engineering.*
ARTHUR MICHAEL, A. M., PH. D.
*Professor of Chemistry.*
DAVID L. MAULSBY, A. M.
*Professor of English Literature and Oratory.*
GARDNER C. ANTHONY, A. M.
*Professor of Technical Drawing.*
LEO R. LEWIS, A. M.
*Professor of the History and Theory of Music.*
EDWIN A. START, A. M.
*Assistant Professor of History.*
FRANK W. DURKEE, A. M.
*Assistant Professor of Chemistry.*
FRANK T. DANIELS, A. M. B., SECRETARY.
*Assistant Professor of Civil Engineering.*
WILLIAM K. DENISON, A. M.
*Assistant Professor of the Latin Language and Literature.*
CHARLES ST. CLAIR WADE, A. M.
*Assistant Professor of Greek.*

HERBERT E. CUSHMAN, A. M., PH. D.
*Instructor in Philosophy.*

FRANK E. SANBORN, S. B.
*Instructor in Mechanical Engineering.*

HARRY GRAY CHASE, B. E. E.
*Instructor in Electrical Engineering.*

THOMAS WHITTEMORE, A. B.
*Instructor in English.*

FRANK G. WREN, A. M.
*Walker Special Instructor in Mathematics.*

CHARLES C. STROUD, A. B.
*Instructor in Physical Training.*

ROBERT N. HARTMAN, A. B., PH. D.
*Instructor in Quantitative Analysis.*

VIRGIL L. LEIGHTON, A. M., PH. D.
*Instructor in Organic Chemistry.*

CHARLES H. CHASE, S. B.
*Instructor in Shop Work.*

## STANDING COMMITTEES OF THE FACULTY.

ADMISSIONS: Professor Maulsby, *Chairman;* the examiners and the Secretary of the Faculty.

PROMOTIONS: Professor Shipman, *Chairman;* Professors Hooper, Brown, Fay, and Assistant Professor Durkee.

SCHOLARSHIPS AND AIDS: President Capen, *Chairman;* Professor Shipman and Assistant Professor Daniels.

PROGRAM: Assistant Professor Start, *Chairman;* Professors Hooper, Brown, and Lewis, and Assistant Professor Daniels.

CATALOGUE: Assistant Professor Start, *Chairman;* Professors Hooper and Maulsby.

MEMBERS ON THE PART OF THE FACULTY OF THE ADVISORY COMMITTEE ON ATHLETICS: Professor Harmon (from the Divinity School), *Chairman;* Assistant Professors Durkee and Daniels.

GLEE CLUB: Professor Lewis, *Chairman;* Professor Knight (from the Divinity School), and Assistant Professor Daniels.

FRESHMAN PLANS OF STUDY: Professor Shipman, *Chairman;* Professors Brown and Lewis, and Assistant Professor Wade.

DEPARTMENT OF ENGINEERING: Professor Brown, *Chairman;* President Capen, Professors Hooper and Bray, and Assistant Professor Durkee.

BOOKS AND SUPPLIES: Professor Lewis, *Chairman;* Assistant Professor Durkee, and Mr. Wren.

# Requirements for Admission.

Two sets of entrance requirements are open to candidates for admission to the College in 1898. After that year the new requirements as stated in the following pages under the caption, "Requirements after 1898," will be those by which candidates for admission will be tested. In 1898 candidates will be examined under the present requirements unless they express a desire to be examined under the new requirements.

## THE PRESENT REQUIREMENTS.

### SUBJECTS OF EXAMINATION.

The subjects in which candidates for admission to the Freshman Class may be examined are given below. The requirements for candidates for the several courses will be found in the schedule of examination groups on pages 47 to 49.

**Latin.**

1. LATIN GRAMMAR. — Allen and Greenough's or Harkness's Grammar, including Prosody.

2. CÆSAR. — Gallic War, Books I–IV.

3. CICERO. — Orations against Catiline, for Archias, Marcellus, and the Manilian Law.

4. VIRGIL. — Æneid, Books I–VI.

5. OVID. — Metamorphoses, 2,500 lines.

6. LATIN COMPOSITION. — Collar's Latin Composition, and translation into Latin of a connected passage of English prose, not taken from the text-book, but involving only familiar words and idioms.

ALTERNATIVES. — While the foregoing requirements are preferred, equivalents will be accepted; also in place of the last two orations of Cicero and requirement 5, an examination may be taken, if desired, on average passages from the above-named works, not included in the portions prescribed.

**Greek.**

7. GREEK GRAMMAR. — Hadley-Allen's or Goodwin's Greek Grammar, including Prosody.

Greek.

8. XENOPHON. — Anabasis, four books.

9. HOMER. — Iliad, three books.

10. GREEK COMPOSITION. — The translation into Greek of a connected passage of English prose. Woodruff's Greek Composition is recommended as a drill-book.

ALTERNATIVES. — In place of requirements 8 and 9, translation at sight of easy passages of the Anabasis and average passages from the Iliad (with a vocabulary of the less-used words).

German.

11. ELEMENTARY GERMAN.

The Elementary Examination will be adapted to the proficiency of those who have studied German in a systematic course of five periods a week for *one* year. It will consist of two parts (which, however, cannot be taken separately): —

(*a*) The translation at sight of a passage of easy prose containing no rare words.

The passages set for translation will be suited to candidates who have read not less than one hundred and fifty duodecimo pages of simple German, chiefly narrative prose; this amount includes sight reading done in class. — It is important that all translation be done into clear and idiomatic English.

(*b*) The translation into German of simple English sentences, to test the candidate's familiarity with elementary grammar.

Elementary grammar is understood to include the conjugation of the weak and the more usual strong verbs; the declension of articles, adjectives, pronouns, and such nouns as are readily classified; the commoner prepositions; the simpler uses of modal auxiliaries; the elements of syntax and word-order. — Proficiency may also be tested by direct questioning.

Practice in pronunciation by reading aloud as much as possible from the texts used in the class is recommended; also the writing of German from dictation.

12. INTERMEDIATE GERMAN.

The Intermediate Examination will be adapted to the proficiency of those who have studied German in a systematic course of at least four periods a week for *two* years. It will consist of two parts (which may be taken separately): —

(*a*) The translation at sight of ordinary German.

The remarks under 13 (*a*) apply, merely substituting "*two hundred*" for "*six hundred*" in that program.

(*b*) The translation into German of a passage of simple English prose.

**German.** A less extensive knowledge of syntax than for 13 (*b*) will be presupposed in the selection of the matter for translation.

### 13. ADVANCED GERMAN.

The Advanced Examination will be adapted to the proficiency of those who have studied German in a systematic course of at least four periods a week for *three* years. It will consist of two parts (which may be taken separately) : —

(*a*) The translation at sight of standard German.

In preparation for this examination candidates will be expected to have read, in addition to the amount specified under "Elementary (*a*)," at least six hundred duodecimo pages of classical and contemporary prose and verse, to be selected from such works as the following : Riehl, *Kulturgeschichtliche Novellen;* Freytag, *Bilder aus der deutschen Vergangenheit*, especially *Aus dem Mittelalter* and *Aus dem Jahrhundert des groszen Krieges;* Kohlrausch, *Das Jahr* 1813; Schiller, *Der dreiszigjährige Krieg*, *Wilhelm Tell*, *Maria Stuart*, *Die Jungfrau von Orleans;* Goethe, *Hermann und Dorothea*, *Egmont*, *Iphigenie;* Lessing, *Minna von Barnhelm.* At least one half of the amount read should be nineteenth century prose.

(*b*) The translation into German of a passage of easy English prose.

In preparation for this examination candidates will be expected to have acquired a thorough knowledge of accidence, the elements of word-formation, and the principal uses of prepositions and conjunctions; the essentials of syntax, especially the uses of modal auxiliaries and the subjunctive and infinitive modes. Proficiency may also be tested by direct questioning.

It is recommended that the candidate acquire the ability to follow a recitation conducted in German and to answer in that language questions asked by the instructor.

**French.**

### 14. ELEMENTARY FRENCH.

The Elementary Examination will be adapted to the proficiency of those who have studied French in a systematic course of five periods a week for *one* year. It will consist of two parts (which, however, cannot be taken separately) : —

(*a*) The translation at sight of easy prose.

The passages set for translation will be suited to candidates who have read not less than two hundred duodecimo pages from the works of at least three different authors; this amount includes sight reading done in class. Not more than half the reading should be from works of fiction. It is important that all translation be done into clear and idiomatic English.

(*b*) The translation into French of English sentences, or a short

**French.**

connected passage, to test the candidate's familiarity with elementary grammar.

Elementary grammar is understood to include the conjugation of regular and the more usual irregular verbs, such as *aller*, *tenir*, *pouvoir*, *savoir*, *voir*, *vouloir*, *dire*, *faire*, and those belonging to the classes represented by *dormir*, *ouvrir*, *connaître*, *conduire*, *craindre;* the forms and positions of the personal pronouns; the uses of other pronouns and of possessive, demonstrative, and interrogative adjectives; the inflection of nouns and adjectives for gender and number, except rare cases; the commoner uses of the article; and the partitive constructions. — Proficiency may also be tested by direct questioning.

Pronunciation should be carefully taught, and the pupil should be accustomed to hear and understand the spoken language. The writing of French from dictation is also recommended.

### 15. INTERMEDIATE FRENCH.

The Intermediate Examination will be adapted to the proficiency of those who have studied French in a systematic course of at least four periods a week for *two* years. It will consist of two parts (which may be taken separately): —

(*a*) The translation at sight of ordinary French.

The remarks under 16 (*a*) apply, merely substituting "*three hundred*" for "*eight hundred.*"

(*b*) The translation into French of a passage of easy English.

A less extended knowledge of syntax than for 16 (*b*) will be presupposed in the selection of matter for translation.

### 16. ADVANCED FRENCH.

The Advanced Examination will be adapted to the proficiency of those who have studied French in a systematic course of at least four periods a week for *three* years. It will consist of two parts (which may be taken separately): —

(*a*) The translation at sight of standard French.

The passages set for translation will be suited to candidates who have read, in addition to the amount specified under "Elementary (*a*)," not less than eight hundred duodecimo pages of classical and contemporary prose and verse from the writings of at least five standard authors.

(*b*) The translation into French of a passage of English prose.

In preparation for this examination candidates will be expected to have acquired a thorough knowledge of accidence and a familiarity with the essentials of French syntax, especially the uses of modes and tenses, and also with the commoner idiomatic phrases. — Proficiency may also be tested by direct questioning.

**French.** Careful attention should be paid to pronunciation and to the use of spoken French, that the candidate may at least acquire the ability to follow a recitation conducted in the language and to answer questions asked by the instructor.

**Mathematics.** 17. ALGEBRA, through quadratic equations, including radical quantities, together with proportion, arithmetical and geometrical progression, and the binomial theorem for positive integral exponents.

18. PLANE GEOMETRY.

19. SOLID GEOMETRY.

**History.** 20. (*a*) ANCIENT HISTORY (Greece and Rome), or
(*b*) MEDIÆVAL AND MODERN EUROPEAN HISTORY, or
(*c*) THE HISTORY OF ENGLAND AND THE UNITED STATES.

The following text-books are recommended and will indicate the amount of preparation required: (*a*) and (*b*), Sheldon's Outlines of General History; (*a*), for Ancient History, Oman's or Smith's (smaller) Greece, Allen's Roman People; for Mediæval and Modern Europe, Myers's General History; for the History of England and the United States, Montgomery's Leading Facts in English History, Fiske's History of the United States for Schools, Johnston's History of the United States for Schools, Montgomery's Students' American History, or Channing's Student's History of the United States. The use of such manuals as Bacheler's American History (Library method) and Getchell's Study of Medieval History by the Library method is helpful.

**English.** 21. ENGLISH.

*Note.* — No candidate will be accepted in English whose work is notably defective in point of spelling, punctuation, syntax, idiom, or division into paragraphs.

1. *Reading and Practice.* — A certain number of books will be set for reading. The candidate will be required to present evidence of a general knowledge of the subject-matter, and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics, to be chosen by the candidate from a considerable number — perhaps ten or fifteen — set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may be allowed to present an exercise book, properly certified by his instructor, containing compositions or other written work done in connection with the reading of the books.

The books set for this part of the examination will be: —

1898. — Milton's Paradise Lost, Books I and II; Pope's Iliad, Books I and XXII; The Sir Roger de Coverley Papers in *The Spectator;*

Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables. **English.**

1899. — Dryden's Palamon and Arcite; Pope's Iliad, Books I, VI, XXII, and XXIV; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; De Quincey's The Flight of a Tartar Tribe; Cooper's The Last of the Mohicans; Lowell's The Vision of Sir Launfal; Hawthorne's The House of the Seven Gables.

2. *Study and Practice.*— This part of the examination presupposes the more careful study of each of the works named below. The examination will be upon subject-matter, form, and structure; and will also test the candidate's ability to express his knowledge with clearness and accuracy. The books set for this part of the examination will be: —

1898. — Shakespeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Tennyson's The Princess.

1899 — Shakespeare's Macbeth; Milton's Paradise Lost, Books I and II; Burke's Speech on Conciliation with America; Carlyle's Essay on Burns.

22. PHYSICS. — The requirement in Physics is an acquaintance with the subject as treated in Avery's or Gage's work, or any other of similar grade, with special attention to Mechanics and ability to work out numerically problems in that department. **Sciences.**

23. CHEMISTRY. — Remsen's Briefer Course or its equivalent.

24. NATURAL HISTORY. — Any two of the four subjects: Botany, Zoölogy, Physiology, or Geology. The amount required in each is essentially covered by any good text-book for secondary schools. In Botany and Zoölogy, laboratory work is of more importance than the study of the text-book. As illustrating the character of preparation required, the following books may be mentioned: In Botany, Bessey's Briefer Course, Campbell's Structural and Systematic Botany, or Spaulding's Introduction to Botany; in Zoölogy, Colton's Practical Zoölogy; in Physiology, Huxley's Elementary Physiology, Jenkins's Advanced Lessons in Human Physiology, or Martin's Human Body, briefer course; in Geology, Dana's Geological Story Briefly Told, or Leconte's Elements of Geology.

25. FREEHAND DRAWING. — Outline drawing from simple casts, geometric models, and groups of models.

### Examination Groups.

Candidates for courses leading to the degree of Bachelor of

**For courses leading to degree of A. B.**

Arts must take their examination in the subjects comprised in one of the two following groups: —

### Group I.

Latin, 1, 2, 3, 4, 5, and 6.
Greek, 7, 8, 9, and 10.
German, 11, or French, 14.
Mathematics, 17 and 18.
History, 20.
English, 21.

### Group II.

Latin, Mathematics, History, and English, as in I.

| | | |
|---|---|---|
| German, 11 and 13.<br>French, 14. | or | French, 14 and 16.<br>German, 11. |

This group differs from Group I in the substitution for Greek of advanced work in Modern Languages.

**For courses to degree of Ph. B.**

Candidates for courses leading to the degree of Bachelor of Philosophy must take their examination in the subjects comprised in one of the two following groups: —

### Group III.

Latin, Mathematics, History, and English, as in I.

| | | |
|---|---|---|
| German, 11 and 12.<br>French, 14. | or | French, 14 and 15.<br>German, 11. |

### Group IV.

| | | | | |
|---|---|---|---|---|
| Mathematics, History, and English, as in I.<br>German, 11 and 13.<br>French, 14. | or | French, 14 and 16.<br>German, 11. | or | German, 11 and 12.<br>French, 14 and 15. |

| | |
|---|---|
| Physics, 22.<br>Chemistry, 23.<br>Natural History, 24. | To be accepted, these subjects must represent an aggregate of at least three years of study, with an average of four periods a week. |

[Latin, 1, 2, 3, and in 4, three books of the Æneid, or their equivalent, will be accepted in place of one intermediate Modern Language, that is, German, 11 and 12, or French, 14 and 15.]

Groups III and IV are offered to meet the needs of graduates of the English courses, so called, in the best high schools, who may desire to enter upon college study looking toward a degree. It will be seen, by reference to the appropriate numbers in the preceding subject list, that Group III accepts a smaller amount of preparation in the modern languages than that required for entrance through Group II to courses leading to the degree of Bachelor of Arts. Group IV allows the substitution for Latin of an increase over the requirement of Group III in modern languages, and of elementary work in three scientific subjects.

### Group V.

**For courses leading to degree of S. B.**

Mathematics, History, and English, as in I.
Latin, 1, 2, and in 4, four books of the Æneid; or
German, 11 and 12; or
French, 14 and 15.
Science: One year's work, with a weekly average of at least three periods of class work, in one of the following: Chemistry, Physics, Physiology, Botany, Zoölogy, Geology, Drawing.

This examination group admits to the courses leading to the degree of Bachelor of Science: the General Course in Science, the Special Courses in Biology and Chemistry, and the Medical Preparatory Course. These courses are intended primarily for graduates of English high schools who have a special object before them lying along the lines laid out for these courses.

**For Candidates for Engineering Courses.**

Candidates for the courses leading to the degree of Bachelor of Science in Engineering will be required to take the subjects comprised in

### Group VI.

Mathematics, 17, 18, and 19.
German, 11, or French, 14.
English, 22.
Drawing, 26.

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## REQUIREMENTS AFTER 1898.

Every candidate for admission to the College of Letters is required to pass examinations in two groups of subjects, known respectively as the Primary and the Secondary Group. The Primary Group includes certain prescribed subjects in different fields, an elementary training in which is regarded as fundamental for college study. In the Secondary Group a range of options, recognizing the equivalence of different preparatory studies when properly pursued, is presented. This permits the candidate to choose the more advanced subjects to be offered as evidence of capacity in accordance with the course of study pursued in the preparatory school, and with that which he proposes to pursue in college.

The requirements presuppose a secondary school course of four years of systematic study, in which at least eighteen school periods a week are given to instruction in subjects to be offered as a part of the preparation for college. On this basis the *entrance unit* is taken as representing approximately three recitation-periods a week for one year, the full requirement being, therefore, twenty-four entrance units. The time spent is not, however, regarded as an exact measure of the quantity, or range of work, and the entrance unit is held as an average measure.

No person will be admitted to regular standing as a candidate for a degree who has conditions amounting to more than *three entrance units* in the Primary Group, or to more than *six* in both groups, and of these not more than one may be in any one primary subject, or in the advanced foreign language offered; but candidates who have passed the requirements of the Primary Group with conditions not exceeding *three entrance units*, and have otherwise complied with the requirements governing the admission of special students, may be admitted as special students, and allowed to take such work in the College as they may be qualified to carry on. These students may, when the College offers subjects covering the ground of their deficiencies, make up such deficiencies by taking the corresponding subject in the College, and so ultimately attain regular standing; but work so taken to fulfil entrance requirements will in no case be counted as a part of the College requirements for a degree.

The values in entrance units affixed to each subject in the following lists of the two groups will enable the candidate to make up a schedule counting the required number of units.

Candidates may, at the discretion of the Committee on Admissions, receive credit of one or more entrance units for additional time spent on accepted subjects. Partial credit in any subject may be given at the discretion of the examiner, but all such credit will be conditioned upon the ultimate completion of the requirement by college work in the same subject, and deficiencies in any subject cannot be offset by credit for preparation based upon less than the minimum amount of work called for in another subject.

## PRIMARY GROUP.*

All candidates for admission to the College are required to pass satisfactory examinations in the following subjects, counting an aggregate of twelve entrance units: —

### I. **Elementary English.** *Three entrance units.*

*Note.* — No candidate will be accepted in English whose work is notably defective in point of spelling, punctuation, syntax, idiom, or division into paragraphs.

1. *Reading and Practice.* — A certain number of books will be set for reading. The candidate will be required to present evidence of a general knowledge of the subject-matter, and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics, to be chosen by the candidate from a considerable number — perhaps ten or fifteen — set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may be allowed to present an exercise book, properly certified by his instructor, containing compositions or other written work done in connection with the reading of the books.

The books set for this part of the examination will be: —

1898. — Milton's Paradise Lost, Books I and II; Pope's Iliad, Books I and XXII; The Sir Roger de Coverley Papers in *The Spectator*; Goldsmith's The Vicar of Wakefield; Coleridge's The

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* A tabulated summary of all the requirements will be found on page 62.

Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables.

1899. — Dryden's Palamon and Arcite; Pope's Iliad, Books I, VI, XXII, and XXIV; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; De Quincey's The Flight of a Tartar Tribe; Cooper's The Last of the Mohicans; Lowell's The Vision of Sir Launfal; Hawthorne's The House of the Seven Gables.

2. *Study and Practice.* — This part of the examination presupposes the more careful study of each of the works named below. The examination will be upon subject-matter, form, and structure; and will also test the candidate's ability to express his knowledge with clearness and accuracy. The books set for this part of the examination will be: —

1898. — Shakespeare's Macbeth; Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Tennyson's The Princess.

1899. — Shakespeare's Macbeth; Milton's Paradise Lost, Books I and II; Burke's Speech on Conciliation with America; Carlyle's Essay on Burns.

**2. One of the following languages: —** *Three entrance units.*

i. ELEMENTARY GERMAN.

The elementary examination will be adapted to the proficiency of those who have studied German in a systematic course of at least four periods a week for *two* years. It will consist of two parts (which may be taken separately): —

(*a*) The translation at sight of ordinary German. In preparation for this examination candidates will be expected to have read, in addition to not less than one hundred and fifty duodecimo pages of simple German, chiefly narrative prose, at least two hundred pages of classical and contemporary prose and verse, to be selected from such works as the following: Riehl, *Kulturgeschichtliche Novellen;* Freytag, *Bilder aus der deutschen Vergangenheit*, especially *Aus dem Mittelalter* and *Aus dem Jahrhundert des groszen Krieges;* Kohlrausch, *Das Jahr* 1813; Schiller, *Der dreiszigjährige Krieg*, *Wilhelm Tell, Maria Stuart, Die Jungfrau von Orleans;* Goethe, *Hermann und Dorothea*, *Egmont*, *Iphigenie;* Lessing, *Minna von Barnhelm.* At least one half of the amount read should be nineteenth century prose. It is important that all the translation should be done into clear and idiomatic English.

(*b*) The translation into German of a passage of simple English prose.

A less extensive knowledge of syntax than for Advanced German (see Secondary Group) will be presupposed in the selection of the matter for translation.

ii. ELEMENTARY FRENCH.

The elementary examination will be adapted to the proficiency of those who have studied French in a systematic course of at least four periods a week for *two* years. It will consist of two parts (which may be taken separately): —

(*a*) The translation at sight of ordinary French. The passages set for translation will be suited to candidates who have read not less than five hundred duodecimo pages of classical and contemporary prose and verse from the writings of at least five standard authors. It is important that all the translation should be done into clear and idiomatic English.

(*b*) The translation into French of a passage of easy English.

A less extended knowledge of syntax than for Advanced French (see Secondary Group) will be presupposed in the selection of matter for translation.

iii. ELEMENTARY LATIN.

The elementary examination will be suited to the attainment of those who have studied Latin systematically for at least four periods a week for two years. It will consist of two parts, which cannot be taken separately: —

(*a*) The translation at sight into idiomatic English of simple Latin prose, with questions on the ordinary forms and constructions of the language. Candidates will be expected to have read Cæsar, De Bello Gallico, I-III, and in addition about twenty pages of Teubner text (*e. g.* Cæsar, De Bello Gallico, IV, or seven hundred and fifty lines of Ovid, or an equivalent.)

(*b*) The translation into Latin of easy sentences, involving only familiar words and idioms.

iv. ELEMENTARY GREEK.

The examination will be adapted to the proficiency of those who have studied Greek in a systematic course of not less than four recitation periods a week, extending through at least two school years. It will consist of two parts which cannot be taken separately.

(*a*) The translation at sight of passages of simple Attic prose.

(*b*) A thorough examination on Book II of Xenophon's Anabasis (about thirty pages Teubner text) directed to testing the candidate's mastery of the ordinary forms, constructions, and idioms of the language; the test to consist, in part, of writing simple Attic prose, involving the use of such words, constructions, and idioms only as occur in the prescribed portion of Xenophon.

Before taking the elementary examination the candidate should have read, in addition to the usual grammar work, at least four books of Xenophon's Anabasis or their equivalent.

### 3. **Elementary History.** *Three entrance units.*

Two of the following: —

i. The History of Greece to the death of Alexander, with due reference to Greek life, literature, and art.

ii. The History of Rome to the accession of Commodus, with due reference to Roman literature and government.

iii. The History of England, with due reference to English social and political development.

iv. American History, with the elements of Civil Government.

For preparation in each of these subjects the equivalent of one year's work of not less than three periods a week is necessary. The examination in each case will require comparison and judgment on the part of the candidate, and not merely the use of memory. The use of at least one good text-book of not less than three hundred pages, collateral reading aggregating not less than five hundred pages, and practice in written work, will be presumed. In addition to the examination the presentation of written work done in the secondary school and certified by the teacher will be an important part of the evidence of proficiency required by the College. This written work should be presented, when the candidate appears for examination, in the form of a note-book or bound collection of notes, of not less than fifty written pages in each subject offered. Such written work must include practice in some of the following: —

(*a*) Notes and digests of the pupil's reading outside the text-books.

(*b*) Written recitations requiring the use of judgment and the application of elementary principles.

(*c*) Written parallels between historical characters or periods.

(*d*) Brief studies of topics limited in scope, prepared outside the class-room, and including the use of contemporary material.

(*e*) Historical maps or charts, showing movements of exploration, migration, or conquest, territorial changes, or social phenomena.

### 4. **Elementary Mathematics.** *Three entrance units.*

A knowledge of the metric system and ability to perform accurately the ordinary processes of arithmetic are presumed. The examination will include: —

(*a*) Algebra, through quadratic equations, including radical quantities, together with proportion, arithmetical and geometrical progression, and the binomial theorem for positive integral exponents, and: —

(*b*) Plane Geometry, including the solution of simple original exercises and numerical problems.

## SECONDARY GROUP.

**Bachelors of Arts.***— Every candidate for admission to regular standing in the courses leading to the degree of Bachelor of Arts is required to pass in a satisfactory manner examinations in subjects chosen from this group, aggregating twelve entrance units, including an advanced requirement in at least one foreign language other than the elementary language offered in the Primary Group.

**Special Students.** — Candidates for admission as special students must comply with the regular requirements of the Primary Group, and must also take such examinations as may be required by the instructor of the major department to which they seek admission. These requirements may be waived by special vote of the Faculty in the case of students seeking instruction in a limited range of subjects bearing directly upon the work of a chosen profession.

The subjects and their values in entrance units are as follows: —

1. **Advanced English.** *One entrance unit.*

One of the following: —

i. A detailed study of a single period of English literature and of not fewer than three authors belonging to it.

ii. Old English (Anglo-Saxon): chiefly simple prose and grammar.

iii. Chaucer: Prologue, Knights Tale, and Nonne Prestes Tale, including vocabulary, inflection, and prosody.

2. **Elementary German** (Primary Group, 2, i) when not offered in the Primary Group. *Three entrance units.*

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*In view of the fact that certain important questions concerning entrance requirements for technical schools are now being considered by committees representing several prominent institutions, the announcement of requirements in the Secondary Group, for candidates for the degree of Bachelor of Science, is deferred.

3. **Elementary French** (Primary Group, 2, ii) when not offered in the Primary Group. *Three entrance units.*

4. **Elementary Latin** (Primary Group, 2, iii) when not offered in the Primary Group. *Three entrance units.*

5. **Elementary Greek** (Primary Group, 2, iv) when not offered in the Primary Group. *Three entrance units.*

6. **Advanced German.** *Four * entrance units.*

The advanced examination will be adapted to the proficiency of those who have studied German in a systematic course of at least four periods a week for *three* years. It will consist of two parts (which may be taken separately): —

(*a*) The translation at sight of standard German.

In preparation for this examination candidates will be expected to have read, in addition to not less than one hundred and fifty duodecimo pages of simple German, chiefly narrative prose, at least six hundred pages of classical and contemporary prose and verse, to be selected from such works as those enumerated in Primary Group, 2, i, Elementary German, (*a*). At least one half of the amount read should be nineteenth century prose.

(*b*) The translation into German of a passage of easy English prose.

> In preparation for this examination candidates will be expected to have acquired a thorough knowledge of accidence, the elements of word-formation, and the principal uses of prepositions and conjunctions; the essentials of syntax, especially the uses of modal auxiliaries and the subjunctive and infinitive modes. Proficiency may also be tested by direct questioning.
>
> It is recommended that the candidate acquire the ability to follow a recitation conducted in German and to answer in that language questions asked by the instructor.

7. **Advanced French.** *Four * entrance units.*

The advanced examination will be adapted to the proficiency of those who have studied French in a systematic course of at least four periods a week for three years. It will consist of two parts (which may be taken separately): —

(*a*) The translation at sight of standard French.

The passages set for translation will be suited to candidates who have read not less than one thousand duodecimo pages of classical and contemporary prose and verse from the writings of at least five standard authors.

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* An advanced foreign language includes the corresponding elementary, and the credit therefor.

(*b*) The translation into French of a passage of English prose.

In preparation for this examination candidates will be expected to have acquired a thorough knowledge of accidence and a familiarity with the essentials of French syntax, especially the uses of modes and tenses, and also with the commoner idiomatic phrases. — Proficiency may also be tested by direct questioning.

Careful attention should be paid to pronunciation and to the use of spoken French, that the candidate may at least acquire the ability to follow a recitation conducted in the language and to answer questions asked by the instructor.

### 8. Advanced Latin. *Six * entrance units.*

The advanced examination will be suited to the attainment of those who have studied Latin systematically for at least five periods a week for four years. It will consist of two parts, which may be taken separately: —

(*a*) The translation at sight of passages selected from Cæsar, Vergil, Ovid, and Cicero, with a thorough examination on a prescribed portion of Cicero's speeches (Orations against Catiline, II, III, IV), to test the candidate's mastery of the ordinary forms, constructions, and idioms. Candidates will be expected to have read Cæsar, B. G. I–III ; Cicero, the speeches against Catiline and on the Manilian Law; Vergil, Æneid, I–V; and in addition not less than twenty pages, Teubner text, of Cæsar (*e. g.* Book IV), twenty to twenty-five pages, Teubner text, of Cicero (*e. g.* the orations for Archias and Marcellus), nine hundred lines of Vergil, and fifteen hundred lines of Ovid, to be selected at the discretion of the preparatory teacher.

The examination in sight reading will be based on the assumption that candidates have read the portions above specified.

(*b*) The translation into Latin prose of a passage of connected narrative, based on one of the prose authors ordinarily read. Moulton's Preparatory Latin Composition or Daniell's New Latin Composition will indicate the amount of work required.

A more extended knowledge of grammar will be expected than in the case of Elementary Latin.

Practice in reading at sight, and a general training in the proper methods of reading should form an important part of the preparation from the very first. The Roman pronunciation is recommended.

### 9. Advanced Greek. *Five * entrance units.*

The Advanced Examinations will be adapted to the proficiency of those who have studied Greek in a systematic course of five exercises a week, extending through at least three school years. The two examinations may be taken separately: —

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* An advanced foreign language includes the corresponding elementary, and the credit therefor.

(*a*) The translation at sight of an average passage of Homer; with questions on ordinary forms, constructions, and idioms, and on prosody.

(*b*) The translation into Attic prose of a passage of connected English narrative. The passage set for translation will be based on some portion of the Greek prose works usually read in preparation for college.

Before taking the examination in Advanced Greek the candidate should have completed at least four books of Xenophon's Anabasis or their equivalent in Attic prose, three books of Homer's Iliad, and one book of Homer's Odyssey. It is strongly recommended that Greek composition accompany all stages of the pupil's preparation, and that the pupil be practised in the reading aloud of Greek from the beginning of his course.

### 10. **Advanced History.** *Two entrance units.*

One of the following: —

i. The History of Greece and Rome, for those only who have offered English and American history as primary subjects.

ii. The History of England and America, for those only who have offered Greek and Roman history as primary subjects.

iii. The History of Europe, taking France or Germany as the central object of study, from the Germanic invasions to 1648.

iv. Any one of the primary subjects not offered as such, combined with a year's detailed study of a limited period within that field.

Each of these subjects requires two years' study of not less than three recitation-periods a week, or its equivalent, but i and ii may be divided and a credit of *one entrance unit* will be given for evidence of proficiency representing one year's work in *one* of the two divisions included under each head.

The remarks in connection with the History requirements of the Primary Group apply to these, but a more thorough knowledge and greater power in combining facts and working out results will be expected. The same classes of tests in examination and written work will be applied, except in the case of "the detailed study of a limited period," on which an individual examination will be given. Especial attention will be paid to the use of English in all work submitted.

### 11. **Advanced Mathematics.** *One entrance unit.*

Two of the following: —

i. Plane Trigonometry, with its applications.

ii. Solid Geometry.
iii. Elementary Analytic Geometry.
iv. Advanced Algebra.

## 12. Physics.

(*a*) ELEMENTARY. *One entrance unit.* The examination will be upon such elementary text-books as Gage's, Avery's, or Dolbear's, with emphasis upon Mechanics and Energy.

(*b*) ADVANCED. *Two entrance units.* In addition to (*a*), the candidate is required to present satisfactory evidence, by both certificate and record book, of having completed a year's course of laboratory experiments in Physics of such grade as Hall and Burgin's Text-Book of Physics.

## 13. Chemistry.

(*a*) ELEMENTARY. *One entrance unit.* Preparation for this requirement presupposes a course in general inorganic chemistry (the non-metals) of not less than three periods a week for a year, in amount equal to that in An Introduction to the Study of Chemistry, by Ira Remsen, with experimental work in the non-metals equal in amount to that in Experiments in General Inorganic Chemistry, by Frank W. Durkee. The experiments are to be performed by the students. A laboratory note-book, certified by the instructor and containing an exact record of the experimental work, must be presented by the candidate at the time of examination, or must accompany the certificate. After admission to the College, students who have passed in Elementary Chemistry may take Chemistry 1 (see the catalogue of the College), omitting the laboratory work of the first term; and if they pass a satisfactory examination thereon, they may omit the entire work of the first term in Chemistry 1.

(*b*) ADVANCED. *Two entrance units.* Descriptive theoretical and inorganic chemistry, as in the elementary requirement, and in addition, a course of one year of at least three periods a week devoted to the study of the metals, in amount equal to that in Remsen's text-book, mentioned above, and experiments with the metals and their compounds, covering the ground of, and equal in number to those in Durkee's experimental manual. Students who have passed the advanced requirement may elect Chemistry 2; but before taking Chemistry 11 and 12 they will be required to take Chemistry 1, omitting the laboratory work, or to pass a satisfactory examination thereon.

14. **Natural History.** *One entrance unit.*

In the natural history subjects the examiners give more weight to the character of work than to time spent; but at least three periods a week for the year must have been given to the subject presented. In order that an adequate opinion may be formed, certificates should give full information as to text-books, character of work done, and relative amounts of time devoted to laboratory and to recitation. Laboratory work will count for more than recitation, and certified laboratory note-books should be submitted. In botany and zoölogy the work should be in structural lines, and little credit will be allowed for time spent in the analysis of plants, or in the identification of birds, insects, etc. The following are the subjects which may be presented for admission, the names of authors of text-books in connection with each being an index of the character of the work expected.

i. General Biology : — Huxley and Martin, Dodge.
ii. Botany : — Bergen, Bessey, Campbell, Spaulding, Setchell.
iii. Zoölogy : — Boyer, Colton, Needham.
iv. Physiology : — Huxley, Martin, Jenkins (Advanced Course).
v. Geology : — Dana, Leconte, Scott, Tarr.

## GENERAL INFORMATION RELATING TO ADMISSION.

The regular examination for admission begins on the day after Commencement, and continues through the two following days. A second examination is held on the Tuesday, Wednesday, and Thursday preceding the beginning of the College year. The examination begins at 9 o'clock A. M., on each of these days. The assignment of examination subjects appears in the Calendar, pages 4 and 5.

At the regular examination in June those who will be candidates for admission to the Freshman class one or two years later may present themselves for examination in the subjects of the Primary Group, and others upon which their teachers may certify that they are adequately prepared, and will receive certificates of the subjects upon which they pass, such subjects to be credited to them when they appear for their final examinations.

For admission to advanced standing an examination must be well sustained, both in the preparatory studies and in the studies in which the candidate desires credit for advanced work.

Students entering on examination are required to register at the office of the Registrar before taking their examinations. Those entering on certificate are required to register before noon on the opening day of the College year.

A fee of five dollars must be paid in advance by every candidate who is examined at any other place than the College.

**Admission by Certificate.** — Certificates covering the preparatory work of candidates for admission are received in lieu of examination from schools that have filed with the Secretary of the Faculty statements of their courses of study and of their teaching force, and have been approved by the Faculty. Each certificate must cover a preparatory course of not less than four full years of school work, which must have been in approved schools, though not necessarily continuous in one school. It must state the time devoted to each subject offered for admission, the standing of the student according to the school record, and such facts in regard to method and means of instruction as the department examiners may call for.

Certificates should be in the hands of the Registrar of the College at least one month before the opening of the College year, and any certificate from a school not on the approved list of the College should be accompanied by the necessary information in regard to courses and facilities of instruction in order to be considered by the Committee on Admissions.

The acceptance of certificates is regarded as a favor to the candidate and a courtesy to the certifying school, and it is hoped that the requirements of the College in regard to the nature and form of the certificate will be fully complied with.

Blank forms for certificates will be sent upon application to the *Registrar of the College*, *Tufts College*, *Massachusetts.*

## TABULAR VIEW OF REQUIREMENTS FOR ADMISSION.

### CANDIDATES FOR DEGREE OF A. B.

[Boldface figures indicate the credit in entrance units. The italicized parentheses *Prim.* and *Sec.* refer to the fuller statements of each requirement under the headings Primary and Secondary Group on pages 51-60.]

| GROUP. | ENGLISH. | FOREIGN LANGUAGES. | HISTORY. | MATHEMATICS. | SCIENCE. |
|---|---|---|---|---|---|
| PRIMARY, 12 Units.<br>All subjects required.<br>Conditions amounting to three units allowed, but only one in one subject. | Elementary (*Prim. 1*) **3.** | Elementary (*Prim. 2*) **3.**<br>[One of the following: German, French, Latin, or Greek.] | Elementary (*Prim. 3*) **3.**<br>[Two of the following: Greek, Roman, English, American.] | Elementary (*Prim. 4*) **3.** | |
| SECONDARY, 12 Units.<br>All subjects optional, but one advanced foreign language other than the Primary Group language must be included.<br>But *one* of the *six* possible conditions may be in the advanced foreign language. | Advanced (*Sec. 1*) **1.**<br>Does not include elementary English. | Elementary German (*Sec. 2*) **3.**<br>Elementary French (*Sec. 3*) **3.**<br>Elementary Latin (*Sec. 4*) **3.**<br>Elementary Greek (*Sec. 5*) **3.**<br>Advanced German (*Sec. 6*) **4.** *<br>Advanced French (*Sec. 7*) **4.** *<br>Advanced Latin (*Sec. 8*) **6.** *<br>Advanced Greek (*Sec. 9*) **5.** *<br>* An advanced foreign language includes the corresponding elementary, and the credit therefor. | Advanced (*Sec. 10*) **2.**<br>[Either i, ii, iii, or iv.]<br>[One half of i or ii. **1.**]<br>Does not include elementary history. | Advanced (*Sec 11*) **1.**<br>[Two of i, ii, iii, and iv.]<br>Does not include elementary mathematics. | Physics (*Sec. 12.*) (*a*) **1.**<br>(*b*) **2.**<br>(*b*) includes (*a*)<br>Chemistry (*Sec. 13.*) (*a*) **1.**<br>(*b*) **2.**<br>(*b*) includes (*a*)<br>Natural History (*Sec. 14*) **1.** |

# Requirements for Degrees.

Students may enter upon their work in the courses in Liberal Arts as candidates for the degree of Bachelor of Arts, or for that of Bachelor of Philosophy, or for that of Bachelor of Science, according to the examination group upon which they are admitted to the College. In any case the ground of promotion and of graduation is the intellectual attainment of the individual student, not a fixed requirement of a certain number of years of study. Candidates for the degree of Bachelor of Philosophy will be necessarily somewhat more limited in their selection of subjects because of the nature of their preparation, while the courses leading to the degree of Bachelor of Science consist mainly of prescribed work on special lines. Those who have fulfilled the requirements for the degree of Bachelor of Philosophy may obtain the degree of Bachelor of Arts on the satisfactory completion of six term hours of additional work in approved elective subjects.

The plan of study offered to the student is at once liberal, controlled, and elastic. It combines the requirements of the general culture, which is the prime object of the undergraduate college course, with an opportunity for the development of the individual on the lines to which he is especially adapted, and for preparation for university and professional study. Throughout the courses students have large liberty in choosing their work, but they are brought into personal advisory relations with the major instructors, who arrange and guide a considerable portion of their work after its general direction has been determined. A reasonable amount of guided specialization is thus provided for, while the personal relations of the student with the major instructor form a valuable adjunct to the routine work of instruction in developing the interest and the character of the students. All work actually accomplished by the student in regular standing counts toward the attainment of the degree. The period within which the degree may be attained depends upon the industry and ability of the individual student.

## SYNOPSIS OF THE REQUIREMENTS.

### For A. B. and Ph. B.

[NOTE. — Each department offers a series of subjects for study. The unit for indicating the requirements is the *term hour*, which represents the number of program hours per week required in each subject, expressed for a period of one term. Thus a subject calling for three hours a week, for one term, represents a requirement of three term hours; if it calls for three hours a week for one year, or two terms, the requirement in that subject is six term hours.]

(1) The requirement for the degree of Bachelor of Arts or Bachelor of Philosophy is the satisfactory completion of subjects aggregating one hundred and twenty-eight term hours

(2) The program of prescribed studies is as follows: —

| | TERM HOURS. |
|---|---|
| LANGUAGES (Latin, Greek, French, German; each student to take *three*) . . . . . . . . . . | 18 |
| ENGLISH (Rhetoric, Composition, Themes, Oratory) | 12 |
| MATHEMATICS . . . . . . . . . . . . . . . . | 6 |
| PHYSICAL SCIENCE (Physics, Chemistry, Biology; each student to take *one*) . . . . . . . . | 6 |
| MENTAL AND MORAL SCIENCE (Philosophy, History, Political Science; each student to take *one full or two half* subjects) . . . . . . . | 6 |
| PHYSICAL TRAINING . . . . . . . . . . . . | 2 |
| A total of . . . . . . . . . . . . . . . | 50 |

The requirements are by groups, not by special subjects, and in each group except English and Mathematics some choice is allowed the student.

The program of the student in the first year will be made up from the prescribed groups, except by special permission of the Faculty.

(3) At the end of the first year the student is required to choose a major department, in which he must complete, before

graduation, work amounting to eighteen term hours. He may offer work already done in that subject in some one of the prescribed groups as a part of the eighteen hours which he is required to give to his major department, but no subject indicated in the catalogue as elementary can be counted in such work. The major department and the plan of work for the first half-year must be reported by the student, in the proper form, upon registration on the opening day of the college year.

(4) Acting under the advice of the instructor in his major department, the student will make up a program of eighteen term hours in collateral subjects; that is, subjects tending to strengthen and assist his work in his major. The student's major instructor is to be his official adviser on general matters relating to his college course.

(5) The remaining forty-two term hours of the required aggregate are to be made up by the free election of the student from the various subjects offered, limited only by special restrictions applied to certain subjects.

(6) Upon the satisfactory completion of the aggregate requirement, the student is entitled to receive the Bachelor's degree, but no student shall be granted a degree in less than four years of residence, unless he shall have obtained Grade B as an average for his entire work.

### Summary.

| | | |
|---|---|---|
| Prescribed work . . . . . . . . . . . . . | 50 | term hours. |
| Major department . . . . . . . . . . . . | 18 | ,, ,, |
| Collateral subjects . . . . . . . . . . . | 18 | ,, ,, |
| Free electives . . . . . . . . . . . . . | 42 | ,, ,, |
| | 128 | ,, ,, |

### For S. B.

The requirement for the degree of Bachelor of Science is the satisfactory completion of one hundred and twenty-eight term hours, according to the programs for the General Science Course, Special Courses in Biology and Chemistry, and Medical Preparatory Course, on pages 103 to 106. The highly specialized character of these courses leaves only a small allowance of time outside the prescribed subjects, but there is a limited amount of time at the disposal of the student for free election.

The requirements for the degree of Bachelor of Science in Engineering are given in connection with the detailed statement of the Engineering Courses on page 107 and following.

# Departments of Instruction.

## MAJOR DEPARTMENTS.

Any of the following may be chosen as major departments: —

ENGLISH.
ENGLISH LITERATURE.
GERMAN.
FRENCH.
LATIN.
GREEK.
PHILOSOPHY.
HISTORY.
POLITICAL SCIENCE.
MATHEMATICS.
PHYSICS.
CHEMISTRY.
BIOLOGY.
ENGINEERING.

In the subjoined statement of the work done in the different departments, the name of the major instructor is that given at the head of each department which offers a major course. In other cases the name is given of the instructor in general charge of the department. Names of instructors in charge of each subject are appended to the brief statement of the subject itself.

Bracketed subjects will not be given during the current year. In many cases alternates are indicated, which fill their places in the program for this year. All subjects continue through the year unless otherwise indicated.

A tabular view of the program of hours assigned to the subjects in the courses in Liberal Arts follows the subjoined statements of the several departments. No two subjects assigned to the same hour can be taken simultaneously by any student.

## ENGLISH.

### Professor Shipman.

The course of instruction in English aims at both theoretical knowledge and practical results. It begins with extemporaneous composition in the Freshman year. In this exercise, which is weekly, formal theme-writing is avoided. Topics are

assigned, with some variety of method, at the time of writing, usually not the same topic for all. The brief essays are subject to criticism both in class and with the individual writers. The more formal study of Rhetoric begins with the second year. If a text-book is used as the basis of instruction, it is made, as far as possible, a help to the intelligent discussion of principles, rather than a burden to be carried. Rhetorical precepts are applied in the criticism of this course, and especially in composition, which is required to the middle of the third year. The student's work in literature and other departments of college study is made to furnish real occasion, as well as material, for the preparation of essays. The required Rhetoric may be followed by an elective course in some of its applications, or exclusively in composition. Major students in English will be expected to make English Literature their principal collateral.

### SUBJECTS.

1. — Composition. Lectures, discussion of papers. *One hour a week for the first year. Tuesday at* 2. PROFESSOR SHIPMAN.

2. — The Theory and Practice of Composition. Lectures and readings; criticism and discussion of themes. *Monday, Wednesday, and Friday at* 10.45. MR. WHITTEMORE.

3. — The aim in English 3 is to emphasize the fundamental function of expository writing, and to aid the student to gain clearness, ease, and rapidness of expression. The written work consists of five themes each week. *Monday and Friday at* 9.45 (*first half-year*).
MR. WHITTEMORE.

4. — Three kinds of writing, narration, description, and exposition are discussed, and specimens from eminent authors are studied. The written work consists of two themes each week. *Tuesday and Thursday at* 8.45 (*first half-year*). MR. WHITTEMORE.

5. — Argumentative Composition, a study of its requirements as observed by successful writers, with constant practice by the student. The written work consists of two themes or their equivalent each week. *Two hours a week* (*first half-year*). PROFESSOR SHIPMAN.

6. — Essays, with special attention to the construction of extended discourse. Weekly papers, plans, free discussion, individual criticism. *Two hours a week* (*first half-year*) *or two hours a week* (*second half-year*). PROFESSOR SHIPMAN.

Subjects 1 and 2, with 3, 4, 5, or 6, and Oratory 1, will constitute the prescribed work in English.

7. — Forensics. This subject differs from 5 in directing attention chiefly to the requirements of debate, including the preparation of briefs. The work is wholly written. *Three hours a week* (*first half-year*). PROFESSOR SHIPMAN.

8. — Rhetoric (advanced course). The Principles of Style; the Elements of Criticism. Elective for students who have completed with credit the prescribed work in English, and for such others as may be approved by the instructor. *Monday*, *Wednesday*, *and Friday at* 11.45 (*first half-year*). PROFESSOR SHIPMAN.

9. — Composition (advanced course). Elective for students who have taken Subject 8 in addition to the prescribed work in English. *Monday*, *Wednesday*, *and Friday at* 11.45 (*second half-year*).
PROFESSOR SHIPMAN.

## ORATORY.

### PROFESSOR MAULSBY.

It is intended that the study of oratory shall be of practical benefit to the general student, whether or not he looks to professional pursuit of the art. Exercises are practised in correct breathing, the production of tone, and in gesture; moreover, individual faults are pointed out and remedies suggested. The work in the required subject aims at securing reading that shall be intelligent, natural, and forcible. In this subject the principles that underlie all successful public speaking are indicated, and, so far as possible, these principles are applied in practice. In the elective courses, opportunity is offered for specializing, during two successive years, in either dramatic reading or in senatorial oratory. In connection with oratory as a means of persuasion, it is urged that students take related subjects in English composition. English 5 is suggested as furnishing valuable aid in connection with Oratory 3, and the practice in formal oral debate has been assigned to the second half-year as properly following the thorough drill in forensic composition afforded by English 7.

### SUBJECTS.

1.— The Principles of Oratory Exemplified in Practice. Class exercises in vocalization and gesture. (*a*) *Saturday at* 10.45. (*b*) *Wednesday at* 2.

2.— Study of Selections from Shakespeare and Browning. Individual presentation of standard poetry and prose. *Thursday at* 4.

3.— Study of Selections from the Great Orators. Individual presentation of forensics. *Thursday at* 2.

4.— Dramatic Rendering. Study and delivery of scenes from the standard drama. The possible public presentation of a play. *One hour for the year. Hour to be arranged.*

5.— Formal Oral Debate. The practice of debate, under the usual parliamentary forms of a deliberative body. The possible presentation of a public debate. *Two hours for the second half-year. Hours to be arranged.*

## ENGLISH LITERATURE.

### PROFESSOR MAULSBY.

The study of our literature offers opportunity for acquaintance with the work of selected writers, from the beginning to the present. Intelligent appreciation of the author's thought and of his characteristic mode of expression is the immediate result held in view. Biographical and philological details, the effect of environment, and the mass of published criticism that clusters about the great names are not neglected, although given a subordinate place. The method at first pursued demands attentive reading of much more than can be considered in the class-room, frequent written expression of literary judgments, and occasional private investigation of topics not otherwise treated. The library contains multiple copies of many of the authors read.

It is believed that students of literature will best begin with the first two subjects, taking them together, or in successive years. In the subjects numbered from 3 to 7, the study of linguistic forms is not necessary, which must be required in greater or less degree in the subjects numbered from 8 to 11. But in all subjects the thought-content is regarded as the thing of prime importance. The seminary method is employed in the advanced classes. Students undertaking a line of research are expected to have gained the ability to pursue independent investigation among the books of neighboring libraries. Appropriate collateral subjects are English, Philosophy, French, German, and History, the correlation of studies to be determined in each case by the aims of the student.

Subjects in brackets will be given in 1898–99.

### SUBJECTS.

1.— General View of the Whole Field. Lectures, examinations, and required reading. *Monday at* 10.45.

MR. EARLE, ASSISTANT PROFESSOR WADE, MR. WHITTEMORE, PROFESSOR MAULSBY.

2.— American Literature. Lectures, required reading, special topics, essays. *Monday, Wednesday, and Friday at* 3.
PROFESSOR MAULSBY.

[3.— The English Romantic Movement in Poetry. Lectures, reading, brief critical essays. *Three hours a week* (*first half-year*). *Hours to be arranged.* MR. WHITTEMORE.]

[4.— Poets of the Victorian Era. Lectures, reading, individual treatment of authors not studied in the class. *Three hours a week* (*second half-year*). *Hours to be arranged.* PROFESSOR MAULSBY.]

5.— Prose of the Nineteenth Century. Lectures, reading, brief critical essays. *Tuesday and Thursday at* 2 (*first half-year.*)
MR. WHITTEMORE.

6.— Browning. Poems, collateral reading, lectures, brief critical essays. *Three hours a week* (*second half-year*). *Hours to be arranged.*
MR. WHITTEMORE.

7.— Poetry and Drama of the Restoration. Lectures, parallel reading, essays. *Monday, Wednesday, and Friday at* 3 (*second half-year.*) ASSISTANT PROFESSOR WADE.

[This subject will be given on the application of four qualified students.]

[8.— Shakespeare. Reading of twenty-five plays, lectures, examinations, brief critical essays. *Three hours a week for the year. Hours to be arranged.* *First half-year.* PROFESSOR MAULSBY.
*Second half-year.* MR. WHITTEMORE.]

9.— Chaucer. Study of forms and pronunciation, reading of selections from the Canterbury Tales and the minor poems, essays. *Tuesday and Thursday at* 2, *and a third hour at the pleasure of the instructor.* PROFESSOR MAULSBY.

10. — Anglo-Saxon. Study of the grammar, and the reading of prose selections, during the first half-year. The subject may be

continued through the second half-year, when the whole of Beowulf may be read. *Tuesday, Thursday, and Saturday at* 10.45.

MR. EARLE.

11. — Advanced Anglo-Saxon. Chronological development of Anglo-Saxon prose and poetry. *Three hours for the year. Hours to be arranged.* MR. EARLE.

12. — English Versification. Study of poetic forms and practice in poetic composition. *Tuesday at* 4. PROFESSOR MAULSBY.

[13. — History of English Criticism. From Sir Philip Sidney to Walter Pater. *One hour for the year. Hour to be arranged.*

PROFESSOR MAULSBY.]

14. — Development of a Literary Form, as (*a*) the drama, (*b*) the novel, (*c*) the lyric.

(*a*) Development of the English Drama. Special emphasis will be placed upon the Elizabethan dramatists. *Friday at* 4.

PROFESSOR MAULSBY.

15. — Special Research. Any student sufficiently advanced may pursue a special line of inquiry in the investigation of some restricted field of British or American literature, under the direction of the department.

16. — Historical English Grammar. Brief history of the English language. The development of English sounds and their written characters. The growth of the several parts of speech and of their inflections. *Three hours for the second half-year.* MR. EARLE.

## GERMAN.

PROFESSOR FAY.

The aim of the department is twofold, according as the student has entered with the elementary or the advanced requirement. In the former case it is to lead him in the briefest possible time to such a mastery of the language as will enable him to use it as a source of information, and medium of literary culture; where this preliminary work has already been done, to afford this literary culture itself, together with such historical and linguistic knowledge as may properly accompany advanced work in a literary department. Hence, in the elementary subjects, facility and accuracy of translation are sought by means of copious reading and careful grammatical drill; in the intermediate year the classic masterpieces are read for their own sake, together with such historical material as will throw light upon the epoch in which they were written or with which they deal; in the advanced work the systematic study of the history of the literature is undertaken, and opportunity is afforded for acquiring a knowledge of the earlier literary forms. Composition forms an important element in instruction and in the practice of the language. Though no attempt is made to teach the student to speak the language, he is trained from the outset to hear and to understand it when spoken, chiefly for the sake of the reflex influence of such practice upon pronunciation.

Six consecutive subjects are offered. While it is not impossible to take them all within the four college years, the scheme is based upon the supposition that the earlier ones will have been taken in the preparatory school.

### SUBJECTS.

1. — Elementary German. Joynes-Meissner Grammar, with Lewis's Exercises; Bernhardt's Im Zwielicht, II; Riehl, Burg Neideck; Buchheim's Balladen und Romanzen. *Tuesday, Thursday, and Saturday at* 9.45. PROFESSOR FAY.

German 1 is the equivalent of the entrance requirement in Elementary German, and should be taken in the Freshman year by all who enter with a condition in that subject.

2. — Intermediate German. Reading, Grammar, and Composition. Review of grammatical principles, especially with reference to syntax. Reading of modern prose and poetry, such as Riehl, Der Fluch der Schönheit; Freytag, Aus dem Staat Friedrichs des Grossen; Scheffel, Der Trompeter von Säkkingen. *Tuesday, Thursday, and Saturday at* 8.45. PROFESSOR FAY AND DR. FLUEGEL.

German 2, when taken by entering students, presupposes two years' study of the language in the preparatory school. It is possible for a student who has done with distinction the work of German 1, and who shall do a prescribed amount of outside reading, to omit this subject and enter German 3.

3. — First half-year. Course for the rapid reading of modern prose. Scheffel, Ekkehard; Freytag. Second half-year. Course introductory to the classic authors. Lessing, Minna von Barnhelm; Schiller, Die Jungfrau von Orleans; Goethe, Hermann und Dorothea. *Monday, Wednesday, and Friday at* 9.45. PROFESSOR FAY.

For entering students German 3 presupposes three years of preparatory study. It may be taken as a half-subject by more advanced students.

4. — Schiller and Goethe. Lyrics; Egmont; Maria Stuart; Wallenstein; with collateral reading in historical prose. *Tuesday, Thursday, and Saturday at* 11.45. Professor Fay and Dr. Fluegel.

German 4 is open to entering students who have had four years of preparatory study, or who, having passed with distinction the entrance examination in Advanced German, also pass with credit a special examination in advanced grammar and sight translation.

5. — Advanced Course in Lessing and Goethe. Nathan der Weise, Emilia Galotti, Laocoön; Tasso, Iphigenie, Faust; with collateral reading. *Monday, Wednesday, and Friday at* 4. Professor Fay.

[6. — History of German Literature: Vilmar, Kluge, with illustrative works for leading epochs. Course in Middle High German: Das Nibelungenlied; Walther Von der Vogelweide. A thesis is required of candidates for honors. Professor Fay.]

[7. — German Composition. First half-year: Stein's Exercises, original themes, dictation, conversation. Second half-year: White's Exercises, with more advanced work in original themes, oral and written translation into German, and conversation. This course is offered to students who have satisfactorily completed German 2 or its equivalent. *Monday and Friday at* 4.]

## FRENCH.

### Professor Fay and Professor Lewis.

The plan and scope of the department are, in general, the same as those of the German department, to the statements of which the student is referred. Six consecutive subjects are offered.

1. — Elementary French. The essentials of grammar, with composition; Grandgent's Short Grammar, with College Exercises; a French Reader; reading of short works of modern authors in prose and verse. *Tuesday, Thursday, Saturday at* 9.45.
Professor Lewis and Mr. Earle.

French 1 is the equivalent of the entrance requirement in Elementary French, and should be taken in the Freshman year by all who enter with a condition in that subject.

2. — Intermediate French. Reading, Grammar, and Composition. Review of grammatical principles, especially with reference to syntax;

exercises in composition; short weekly themes; reading of modern fiction and drama, such as Merimée's Colomba and Sandeau's Mademoiselle de la Seiglière. *Tuesday, Thursday, Saturday at* 8.45.
PROFESSOR LEWIS AND MR. EARLE.

French 2, when taken by entering students, presupposes two years' study of the language in a preparatory school. It is possible for a student who has done with distinction the work of French 1 in college, and who shall do a prescribed amount of outside reading, to omit this subject and enter French 3.

3. — First half-year. Course for the rapid reading of modern authors: Thiers, Taine, de Vigny. Second half-year. Introductory work in Seventeenth Century Classics: Corneille, Racine, Molière, Boileau, with collateral reading concerning the period. Review of grammatical principles in Ploetz's Nouvelle Grammaire Française, and occasional brief themes. *Monday, Wednesday, and Friday at* 8.45. PROFESSOR LEWIS AND MR. EARLE.

For entering students, French 3 presupposes three years of preparatory study. It may be taken as a half-subject by more advanced students.

4. — First half-year. Literature and Manners of the Seventeenth Century. Crane's Société Française au XVII^e^ Siècle; Molière, Les Précieuses Ridicules, Les Femmes Savantes; Saint-Simon; Madame de Sévigné. Second half-year. Literature of the Eighteenth Century. The Novel, the Drama, Philosophical Essays. *Monday, Wednesday, Friday, at* 8.45. PROFESSOR FAY.

French 4 is open to entering students who have had four years of preparatory study of the language, or who, having passed with distinction the entrance examination in Advanced French, also pass with credit a special examination in advanced grammar, composition, and sight translation. Juniors and Seniors whose major department is French may be permitted to take 4 and 5 in the same year.

5. — Literature of the Nineteenth Century. The Drama, Poetry, the Novel, Criticism; Chateaubriand, Hugo, Lamartine, de Musset, Balzac, Sainte-Beuve, and selections from contemporary authors. History of French Literature presented by lectures and collateral reading. *Monday, Wednesday, and Friday at* 3.
PROFESSOR LEWIS AND ASSISTANT PROFESSOR WADE.

6.— Demogeot, Littérature de la Langue Française, with illustrative texts for principal epochs. Course in Historical Grammar and Old French: Brunot, Grammaire Historique de la Langue Française,

Bartsch, Chrestomathie de l'Ancien Français. A thesis is required of candidates for honors. *Monday, Wednesday, and Friday at* 11.45.
PROFESSOR FAY.

## ITALIAN.

### PROFESSOR FAY.

The work offered in Italian is open to those only who have had two years of college study in French. With such previous training, the student is able to acquire with rapidity a reading knowledge of the language, and thus to become acquainted within the year with the characteristics of contemporary and classic literature.

#### SUBJECT.

1.— Grandgent's Grammar and Composition; De Amicis, Cuore; Maffei, Merope; Dante, Divina Commedia (Scartazzini's edition.) *Tuesday, Thursday, and Saturday at* 10.45. PROFESSOR FAY.

## LATIN.

### ASSISTANT PROFESSOR DENISON.

The study of the Latin language and literature, it is believed, is a very important help to the attainment of the highest culture. It is quite possible for every student, with proper direction and application, to acquire the power to read, understand, and enjoy the language without translating, and as much time as possible is devoted to reading with that end in view. The study of Latin can also be made to contribute materially to the development of scientific habits of thinking. The department aims to give attention not only to the literature, but also to the history, archæology, art, public and private life, and religion of the Roman people, as well as to the formation and structure of their language and its relation to other languages. Due emphasis is laid on the connection between ancient and modern life and thought. The various reading courses are supplemented by lectures on appropriate topics. Latin 1, 2, either 3 or 4, and two or more composition courses are offered every year, and a number of other subjects, such as Latin 8, 9, 10, and several not yet ready to be announced, will be given at intervals of two or more years. Courses 3, 4, 7, and all designated by numbers above 7 are suitable for graduate students. Such students will, however, be expected to do an extra amount of work in these subjects, and may be required to prepare theses or make other special investigations.

### SUBJECTS.

1.— Livy (Books I and II or XXI and XXII); Cicero (De Senectute and De Amicitia); Horace (Odes and Epodes); reading at sight; lectures on suitable topics. *Tuesday, Thursday, and Saturday at* 10.45.

Latin 1 is introductory to all later subjects.

2.— Terence (two plays); Cicero (selections from the Tusculan Disputations); Tacitus (Agricola and Germania, or selections from the Histories); Pliny (selected letters); reading at sight; lectures on suitable topics. *Tuesday, Thursday, and Saturday at* 9.45.

Open to students who have completed Latin 1.

[3.— Tacitus (selections from the Annals); Suetonius (selections); Juvenal (principal Satires); Martial (selected Epigrams to be read in connection with Juvenal); reading at sight. These authors will be studied from a literary point of view, and with special reference to the information they afford in regard to the history and life of the early Empire. *Monday, Wednesday, and Friday at* 11.45.]

4.— Horace (Satires and Epistles); Cicero (De Oratore or Brutus); Plautus (two or more plays); Lucretius (selections), or selections from Latin prose and verse to illustrate Roman life; reading at sight. *Monday, Wednesday, and Friday at* 11.45.

Subjects 3 and 4 will be given on alternate years, and are designed for those who have completed Latin 2, or its equivalent. Subject 4 is offered in 1897–98.

5.— Latin Composition. Translation of English narrative. This should be taken in connection with Latin 1. *One hour a week for the year, to be arranged with the instructor.*

6.— Latin Composition. *One hour a week for the year, to be arranged with the instructor.*

This subject is open to students who have completed Latin 5, and may be taken most profitably in connection with Latin 2. It is a necessary preliminary to competition for the Latin Composition Prize. Particular attention will be paid to Latin idiom.

[7.— Latin Composition. Original essays in Latin. Study of selections of prose as models. Reading at sight. *One hour a week for the year, to be arranged with the instructor.*]

This subject is designed to meet the wants of those who wish to do advanced work in Latin writing, and is open only to graduates and others who are, in the opinion of the instructor, suitably qualified.

8.— Catullus and the Elegiac Poets, Tibullus, Propertius and Ovid. These poets will be studied purely from a literary point of view. *Tuesday, Thursday, and Saturday at* 8.45 (*first half-year*).
[Will not be given in 1898–99.]

This subject is open to students who have completed Latin 1, and is designed primarily as a supplement to Latin 2, 3, or 4. Ability to read easy German will be desirable, although not absolutely essential. Schulze's Römische Elegiker will be used.

9.— The Private Life of the Romans. Lectures and collateral reading. Short investigations by the students. *Tuesday, Thursday, and Saturday at* 8.45 ; *or at other hours if more convenient for those electing the subject* (*second half-year*).
[Will not be given in 1898–99.]

This subject is open to those who have completed Latin 1, if taken as supplementary to other work in Latin. It will be illustrated by photographs and other reproductions as fully as the resources of the department permit.

10.— Latin Epigraphy. An introduction to the study of Latin Inscriptions. Lectures; reading and interpretation of a large number of inscriptions *Three hours a week for the year, to be arranged with the instructor.*

This will be especially valuable for all who intend to become teachers of Latin. Egbert's Latin Inscriptions ($3.50) will be indispensable.

## GREEK.

### Professor Schneider and Assistant Professor Wade.

The aim of the department is to treat the Greek language not merely as a disciplinary instrument, but as a factor in the broadest and most liberal culture. Throughout the course the practise of reading at sight is encouraged, and especial effort is made to develop such facility that the student may resort with pleasure to the masterpieces of the Greek language, and find in them the delights and inspirations of a noble literature. To this end also considerable attention is paid to the style and literary characteristics of the authors read. The relations of Greek to the Latin, German, and English languages are discussed, and the course is shaped to develop, discipline, and enrich the linguistic resources of the student. Reading without translation is encouraged from the beginning. Incidentally, studies are made of the customs and daily life of the people. Discussion relative to the laws, philosophy, and religion of the Greeks is introduced, and some attempt is made to exhibit the indebtedness of modern civilization to Hellenism.

### SUBJECTS.

1.—Elementary. Goodwin's Grammar; Graves and Hawes's First Book; Xenophon (Anabasis); Homer; Plato (Apology and Crito). *Double subject. Monday, Wednesday, and Friday at* 11.45, *and Tuesday, Thursday, and Saturday at* 9.45.
ASSISTANT PROFESSOR WADE.

Greek 1 is intended for students entering without Greek and wishing to begin the study of that language. It is assumed that their previous training in linguistic studies will enable them to proceed rapidly and accomplish in one year all the work usually done in preparation for college.

2.—Xenophon (Memorabilia or Cyropædia); Herodotus; Homer (Odyssey); Sophocles (Œdipus Rex); Greek Composition. *Monday, Wednesday, and Friday at* 2. ASSISTANT PROFESSOR WADE.

Greek 2 is for students who have passed the entrance requirements in Greek. Particular attention is given to the syntax of the language and to the development of the dialects. Incidentally, study is made of the customs and daily life of the people. The course is supplemented by lectures on Greek literature, Hellenic antiquities, and on the literary characteristics of the authors read.

3.—Lysias (selected orations); Antiphon (Herodes and Choreutes); Demosthenes (On the Crown); Euripides (Medea); Æschylus (Seven against Thebes); reading at sight. *Tuesday, Thursday, and Saturday at* 11.45. ASSISTANT PROFESSOR WADE.

[4.—Andocides (Mysteries and On the Return); Isocrates (Selections); Isæus (Selections); Euripides (Hippolytus); Æschylus (Prometheus Bound); reading at sight. *Tuesday, Thursday, and Saturday at* 11 45. ASSISTANT PROFESSOR WADE.]

Greek 3 and 4 are offered in alternate years and are open to those who have passed in Greek 2. It is intended in either case to give the first term to the critical study of the orators and the second to the dramatists. Rhythm and metre are studied in connection with the dramatists, and modes and tenses with the orators. At suitable points, lectures on the laws, oratory, theatre, and religion of the Greeks are given.

5.— Theocritus (Idylls and Epigrams); Pindar (Olympian and Pythian Odes); Tyler's Selections from Greek Lyrics; reading at sight in the Odyssey. *Hours to be arranged with the instructor.*
Professor Schneider.

Greek 5 is open to those who have completed Greek 3 or 4. Much attention is paid to the development of Greek lyric poetry, and the various theories of rhythm and metre are discussed. Lectures on appropriate topics are given in connection with the work.

6.— Plato (Symposium); Aristotle (Ethics, Books I–IV, or Politics); reading at sight in Herodotus and Lucian. *Hours to be arranged with the instructor.* Professor Schneider.

Greek 6 is open to those who have completed Greek 3 or 4. A critical study of the authors read is supplemented by a general survey of Greek philosophy.

7.— Greek Composition; practice in sight reading. *Half-subject. Hour to be arranged with the instructor.*
Assistant Professor Wade.

Greek 7 may be taken by any one who has had the equivalent of Greek 1. It is especially recommended to Freshmen intending to pursue the study of Greek beyond the Freshman year.

8.— Greek Composition; reading at sight; outside study of some Greek author, including the preparation of an essay. For 1897–8 the author selected is Hesiod. *Half-subject. Hours to be arranged with the instructor.* Assistant Professor Wade.

Greek 8 is intended primarily for Sophomores making Greek their major. Other students properly qualified will be admitted.

9.— Plato (Gorgias, Phædo, Republic I–V); Greek Composition; preparation of thesis. *Wednesday and Friday from* 4 *to* 5.30.
Assistant Professor Wade.

[10.— Study of the sources of Greek History; critical reading of Herodotus, Thucydides, Xenophon, and Diodorus Siculus; Greek Composition; preparation of thesis. *Wednesday and Friday from* 4 *to* 5.30. Assistant Professor Wade.]

[11.— The Rivalry of Æschines and Demosthenes; Æschines, De Falso Legatione, In Ctesiphontem; Demosthenes, private orations connected with life of Demosthenes; orations, On the Embassy and "For the Crown"; Plutarch, Vita Demosthenes; preparation of thesis. *Wednesday and Friday from* 4 *to* 5.30.

ASSISTANT PROFESSOR WADE.]

Greek 9, 10, and 11 are rotated so that each is given every third year, 9 being the subject for 1898–99. These subjects are intended for those wishing to pursue graduate work in the department. They may, however, on permission from the instructor, be taken by any one who has completed Greek 3 or 4. Independent work is encouraged throughout, and theses are read and criticised by the students. Lectures are given in 9 on legal antiquities, in 10 on Greek history, and in 11 on the life, works, style, and philosophy of Plato.

## PHILOSOPHY.

### PROFESSOR SHIPMAN.

The department offers work in all the traditional branches of the subject, adapted to the needs of many kinds of students. To the specialist in the sciences it affords a comprehensive view of the sciences from the point of view of metaphysics. To the student seeking general culture, it offers the liberalizing study of the history of philosophy. To the specialist in philosophy it will give work as far as an undergraduate should go. The department offers no graduate work as yet.

In all cases where there is opportunity, the department advises first for every student the introduction to the history of philosophy (Philosophy 1). The other subjects may then follow at the student's option, or as his specific needs seem to demand. The primer of philosophy is its history, and the natural way is to read this first. To follow this natural course makes of philosophy an inductive science.

Students choosing philosophy as their major department will be expected to take at least three term hours in each of these subjects, History of Philosophy, Logic, and Psychology, and to make up three years of continuous work. The department offers half-year subjects in every case.

### SUBJECTS.

1.—Introductory courses. History of Philosophy; the pre-Socratic Greeks: Socrates, Plato, and Aristotle; the periods of the Renaissance (1500–1689) and the Enlightenment (1689–1781); German Ideal-

ism from Kant to Hegel (1781–1820), and Modern Evolution Theories; lectures and examinations. *Monday, Wednesday, and Friday at* 9.45.
DR. CUSHMAN.

2.— Psychology,— lectures and elementary experiments; the relation between mind and body, introduced by a short study of the anatomy of the brain. *Monday, Wednesday, and Friday at* 9.45 (*second half-year*).
DR. CUSHMAN.

3.— Logic, especially Deductive, with an elementary consideration of fallacies. *Tuesday, Thursday, and Saturday at* 10.45.
PROFESSOR SHIPMAN.

4.— Logic (advanced), especially inductive. *Tuesday, Thursday, and Saturday at* 10.45 (*first half-year*).
PROFESSOR SHIPMAN.

Much attention is paid to practical exercises. Philosophy 4 is open to those students who have, with distinction, completed Philosophy 3. In it fallacies are discussed at much greater length, and recent modifications of logical doctrine are examined.

5.— Ethics, historical and constructive; theses, lectures and text-book. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*).
DR. CUSHMAN.

6.— Ethics, practical; contemporary problems, education, charities, temperance, socialism. *Tuesday, Thursday, and Saturday at* 10.45 (*second half-year*).
PROFESSOR TOUSEY.

Philosophy 6 follows 5 in natural sequence.

7.— The Philosophy of Religion; classification of theological questions, with critical and constructive work by the class; lectures; wide reading. *Monday, Wednesday, and Friday at* 3 (*first half-year*).
PROFESSOR KNIGHT.

8.— Metaphysics. The fundamental questions of philosophy, such as personality, immortality, evil, theism, causation, nature, social consciousness in reference to the points of view of modern empirical science, religious mysticism and philosophical idealism; theses, lectures, text-book. *Monday, Wednesday, and Friday at* 10.45 (*first half-year.*)
DR. CUSHMAN.

[9.— Descartes, Leibnitz, Spinoza; critical and expository reading of the authors; lectures and theses. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*).
DR. CUSHMAN.]

[This subject will be given in 1897–98.]

[10.— English Philosophy from Hobbes to Hume. Hours and method same as 9.
DR. CUSHMAN.]

[This subject will be given in 1898–99.]

[11.— Kant and Schopenhauer. Hours and method the same as in 9. DR. CUSHMAN.]

[This subject will be given in 1899-1900.]

## HISTORY.

### ASSISTANT PROFESSOR START.

The subjects in this department are included under the heads of general European, English, and American history, and special advanced studies. History 1 is the introductory subject by which the student is prepared for more specialized work. Under History 2 there are offered from time to time studies of important epochs in European history, or of single nations. History 3 is devoted to England, and 4, 5, and 6 to our own country. Opportunity is thus given during the undergraduate course to obtain a conspectus of those fields of history most important to the American student. The method of work is briefly explained in connection with the appended statement of subjects. In the work of the department the essential unity of history, and the consequent bearing of the experience of the past upon the problems of the present, are kept constantly in view. The chief aim is not the mere accumulation of facts, but an adequate comprehension of the meaning and method of historical science.

Major students will in most cases be required to choose their collateral subjects in the fields of Political Science or Philosophy, though variations may be made when it seems advisable. English Literature is a natural collateral for those working along the lines of English history. Political Science 2 and 5 are essentially historical. A reading knowledge of French and German is always useful for the student of history, and is necessary for anything approaching a thorough study of continental European history.

### SUBJECTS.

1.— General European History. A study of the elementary principles of historical science and of the outlines of European history to 1815. Two lectures weekly, class discussions, collateral reading, and practice work. *Tuesday, Thursday, and Saturday at* 10.45.

ASSISTANT PROFESSOR START.

History 1 must precede all other subjects in History. It will not be accepted for an advanced degree. It is open to any student who has passed the requirements in History for admission to the College. A considerable amount of time will be given to the Middle Ages and the formative influences from which modern Europe has developed.

[2.— Studies of Periods in European History.

(*a*) The Renaissance and the Reformation.

(*b*) The Eighteenth and Nineteenth Centuries, with especial reference to the French Revolution and its results.]

3.— English History. *Monday, Wednesday, and Friday at* 10.45.
ASSISTANT PROFESSOR START.

4.— American Colonial History. Spain, France, and England in the New World. The formation and social and political life of the colonies. Lectures, collateral readings, and topical reports. Open to students who have taken History 1. *Hours to be arranged (second half-year).* ASSISTANT PROFESSOR START.

5.— Political and Constitutional History of the United States. The Revolution, formation of the Union, development of the Nation under the Constitution. Lectures, study of sources and literature, theses, and topical work. Open to students who have taken History 1 and 4. *Monday, Wednesday, and Friday at* 11.45.
ASSISTANT PROFESSOR START.

History 4 and 5 form a continuous course in which similar methods are used. The collateral reading and topical work involve thorough study of the principal literature of American history and of the leading historical documents. While primarily for undergraduates, these subjects may be taken by graduates, and may count toward an advanced degree, but in such a case it is expected that the subject will be passed with high credit, and that some additional special work will have been done.

[6.— Seminary in American History. Research work with the sources. *Full subject; meetings weekly or fortnightly, at the pleasure of the instructor.* ASSISTANT PROFESSOR START.]

In the seminary each student becomes an active historical investigator, examining the sources upon which history is based, and obtaining by personal experience an insight into the principles of research and criticism. Work of sufficient value done in the seminary will be preserved in the college library. Only students who have done with credit at least nine term hours of work in the department including History 4, are eligible.

[7.—Seminary for the study of the Philosophy and Methods of History. *Weekly meetings to be arranged with the instructor.*
ASSISTANT PROFESSOR START.]

This seminary will be opened whenever two or more properly qualified candidates present themselves. It is intended primarily for graduates, especially for those who intend to teach history, but undergraduates of high standing, who have passed in not less than twelve term hours of work in the department, may be admitted by permission of the instructor. The members will work on independent but coöperative lines, and much attention will be given to methods of historical study and teaching. The hours of meeting will be so arranged that teachers of history in the schools may join the seminary.

8.—The Comparative History of Religions. Egypt, Babylon, Nineveh; Parseeism, Hinduism, Buddhism, Confucianism, Mohammedanism; with a study of the civilizations represented by these religions. *Tuesday, Thursday, and Saturday at* 11.45 (*first half-year*).
PROFESSOR KNIGHT.

## POLITICAL SCIENCE.

### PRESIDENT CAPEN.

In this department are included subjects relating to Economics, Government, and Law.

The subject of Political Economy begins with an historical survey, the object being to trace the growth of economic ideas from the beginning, and to note the phases they have assumed among different peoples in the modern world. Then follows a consideration of the fundamental principles of economics. Students are assigned the task of making practical application of principles to the solution of present economic problems. Time is given to subjects of immediate and living interest, such as the labor question, socialism, the tenure of land, taxation, and finance.

In the study of Ancient Law the object is, first, to determine the nature of primitive jural conceptions, and, as far as possible, to ascertain how they have arisen and on what they are founded; then, to trace the transformations which these conceptions have undergone, particularly in the Roman jurisprudence and the legal systems that have a Roman root. The effect which legal speculations and doctrines have had, not only upon modes of procedure, but upon civil institutions, political principles, social and domestic life, is carefully studied. International Law follows in the second term. So far as the time allows, a treatment of the subject that is at once broad and practical is sought.

Political theory and the practice of government are treated in subject 5.

### SUBJECTS.

1.— Political Enonomy. Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, lectures, and independent investigation dealing with the history of economics, theories of production, consumption, distribution, etc.; problems of profits, wages, and labor. *Tuesday, Thursday, and Saturday at* 8.45.
President Capen.

2.— Ancient Law; Roman Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*).
President Capen.

3.— International Law. Lectures, text-book work, and discussions. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*).
President Capen.

4.— Research work in problems of Government or Economics for students electing Political Science as their major department, who have passed in 1, 2, and 3.
President Capen.

5.— Political Science and Comparative Constitutional Law. A study of the origin and nature of the State, and the development of typical constitutions. Lectures, text-book work, collateral reading, and discussions. *Monday, Wednesday, and Friday at* 8.45.
Assistant Professor Start.

Political Science 5 must be preceded by History 1, and should be preceded or accompanied by History 3 and 5. Political Science 2 is also valuable as an introduction.

## MATHEMATICS.

### Professor Brown.

The study of Mathematics is required through the first year. The branches taught are: Algebra, through the subjects included in most college text-books preceding the theory of equations;

Solid and Spherical Geometry; Plane Trigonometry, with its applications. Two objects are kept constantly in view: first, to acquire and hold certain mathematical facts for future use; secondly and mainly, to train the mathematical faculties so that the student may acquire the ability to deduce mathematical truths from those previously established. The class-room work of the instructors is a combination of lectures with questioning of the students to ascertain that the points presented are duly comprehended.

An opportunity to continue the study of Algebra and also a course in Determinants are offered at the middle of the first year. Plane Analytic Geometry is offered as an elective for the first half of the second year. This study may be continued with higher plane curves and Geometry of three dimensions during the second half of the second year. Differential and Integral Calculus is required for three half-years in the Engineering courses, and the subject is open as an elective to any student who has taken Plane Analytic Geometry.

### SUBJECTS.

1.— Bowser's College Algebra; Solid Geometry; Bowser's Plane Trigonometry. Applications of Plane Trigonometry. *Monday, Wednesday, and Friday at* 8.45 (Division I). MR. JORDAN. *At* 9.45 (Division II). PROFESSOR BROWN or MR. WREN.

2.— Theory of Equations and Elements of Determinants. *Tuesday, Thursday, and Saturday at* 11.45 (*second half-year*). MR. JORDAN.

3.— Bowser's Analytic Geometry. Open to students who have taken 1. *Monday, Wednesday, and Friday at* 11.45 (*first half-year*). PROFESSOR BROWN or MR. WREN.

[See Engineering Courses.]

4.— Spherical Trigonometry; Projections of Triangles; use of Richards's Manual with the sphere. Open to students who have had 1. (*First half-year.*) MR. JORDAN.

5.— Higher Plane Curves; Analytic Geometry of Three Dimensions. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*). PROFESSOR BROWN or MR. WREN.

6.— Differential and Integral Calculus, Osborne's. *Three hours a week (second half-year).* MR. WREN.

[See Engineering Courses.]

7.— Differential and Integral Calculus continued. *Two hours a week (first half-year).* MR. WREN.

[See Engineering Courses.]

8.— Differential and Integral Calculus (advanced course). *Two hours a week (second half-year).* PROFESSOR BROWN or MR. WREN.

9.— Weld's Theory of Determinants; Hanus's Elements of Determinants. *Three hours a week (first half-year).* MR. WREN.

10.— Differential Equations. *Two hours a week (first half-year).* PROFESSOR BROWN or MR. WREN.

[See Engineering Courses.]

11.— Method of Least Squares. Comstock and Merriman. *Two hours a week (second half-year).* PROFESSOR BROWN or MR. WREN.

[*Drawing* 1 (DESCRIPTIVE GEOMETRY) *is also a distinctively mathematical subject. For further subjects essentially mathematical, see subjects* 1 *and* 4 *in the department of Drawing, and subjects* 1, 3, *and* 8 *in the department of Civil and Mechanical Engineering.*]

## PHYSICS.

### PROFESSOR DOLBEAR.

The work in Physics begins with a consideration of General Physics, this being the subject to be taken by those electing Physics for their prescribed work in science, and the introductory subject for major students in Physics. A text-book is used, critical comments and much additional material are given, and frequent lectures are given with experiments. The aim is to present the science of Physics not as a series of detached subjects, but as a consistent body of doctrine in which mechanical principles hold throughout, and from which all the various phenomena are deducible. Hence in each branch there are frequent returns to these first principles. The rapid development of electrical science having quite outstripped text-books, this subject is treated wholly by lectures.

An elective course is offered of about twenty-five lectures upon the relations of Physics to other branches of natural science, introducing the doctrine of the conservation of energy as applicable to all. After this follows a more extended consideration of the fundamental questions in Physics. Spencer's First Principles is read, and its subject-matter thoroughly discussed.

In the Physical Laboratory beginners are given Stewart and Gee's Practical Physics, first volume, for a guide. They work for the most part independently, and each pursues a given subject till satisfactory results are obtained. Glazebrook and Shaw's Practical Physics is followed on the subjects of sound, heat, and light; Pickering's Manipulation and Kohlrausch's Measurements being also used to a limited extent. In electricity and magnetism Stewart and Gee's second volume is mainly followed, supplemented, in the case of engineering students, by parts of Gray's Absolute Measurements and Kempe's Testing. In all laboratory work each student records methods and results in a suitable note book, and is encouraged to do a few things well rather than to go carelessly over a larger ground. Students who are preparing themselves to become teachers of Physics have an opportunity to perform most of the experiments needed for illustrating elementary work.

### SUBJECTS.

1.— General Physics. Lectures, recitations, and experiments. To be taken by students choosing Physics for their prescribed science subject, and introductory to other subjects in Physics. *Monday, Wednesday, and Friday at* 10.45. PROFESSOR DOLBEAR.

3.— Electricity: Thompson's Elementary Lessons in Electricity and Magnetism. Lectures and recitations. *Monday, Wednesday, and Friday at* 11.45 (*second half-year*). MR. H. G. CHASE.

4.— Physical Laboratory. Mechanics, Sound, Heat, and Light. *Six hours a week* (*second half-year*). MR. H. G. CHASE.

5.— Electricity: Theory of Measurements. *Three hours a week* (*first half-year*). Electrical Laboratory: Simple Measurements and Tests. *Two hours a week.* MR. H. G. CHASE.

6.— Relation of Physics to Sociology. Lectures. *Tuesday and Thursday at* 2 (*first half-year*). PROFESSOR DOLBEAR.

7.— Spencer's First Principles. *Tuesday and Thursday at* 2 (*second half-year*). PROFESSOR DOLBEAR.

## CHEMISTRY.

PROFESSOR MICHAEL AND ASSISTANT PROFESSOR DURKEE.

The work in the department begins with Chemistry 1, which is open for election by the students of the courses in Liberal Arts, and is required of engineering students in their second year. The instruction is by means of lectures, recitations, and laboratory work. The lectures, illustrated by numerous experiments, are intended to give a thorough elementary knowledge of theoretical and descriptive inorganic chemistry, including a brief account of the chemistry of the carbon compounds and the principal technical processes. One half of the time devoted to this subject is given to practical work in the laboratory, and the student has an opportunity to verify some of the chemical theories, and to become familiar with substances and their chemical behavior. The lectures are supplemented by recitations and written examinations. An opportunity to continue the study of theoretical and inorganic chemistry is afforded by subjects 11 and 12. Those who wish may supplement the above course of lectures with laboratory practice by taking subject 14, in which some of the more difficult inorganic experiments and preparations are performed.

The instruction in Qualitative Analysis extends through a year, and consists of two subjects (2 and 3) taught in part by lectures and recitations, but mainly by work in the laboratory. During the advanced course the student is required to analyze correctly a large number of mixtures and minerals. Subject 6 is intended to teach the use of the blowpipe in chemistry, together with the tests that are of special value in determinative mineralogy. Crystallography is taken up in connection with this subject. Quantitative Analysis is mainly taught by laboratory practice, in order that the student may attain that skill in manipulation which is necessary for this kind of work. In subject 4 the student is required to analyze the simpler salts and minerals, and in the advanced subject 5, the more complicated minerals, ores, commercial and food products. The analysis of organic substances is included in subject 5.

Gas analysis (subject 9) is taught by lectures and laboratory work, principally in the use of technical methods. Assaying (subject 7) is adapted to familiarize the student with the practical methods of sampling and assaying gold, silver, and lead ores. The above subjects cover a comprehensive study of analytical chemistry, and are intended to give the student such a thorough theoretical and practical knowledge as to prepare him for analytical work of any description. The course of lectures in Metallurgy (subject 8), with recitations, is intended to give the student a general idea of fuels, ore dressing, refractory building materials, and the more important technical methods of extracting iron, copper, and silver.

The study of Organic Chemistry begins with a course of lectures, illustrated by experiments and recitations, which cover the general principles, methods, and description of the most important organic compounds. For those who wish to specialize in this science an opportunity is given by subject 13, in which by lectures the underlying theories of organic chemistry are fully discussed and the relations between them and organic reactions are explained. The laboratory practice in organic chemistry (subject 15) may be begun at the same time as subject 10 and continued with 13. It includes the methods for determining the physical properties and molecular weights of organic substances and the preparation of compounds. When taken in connection with subject 13, one or more researches of special importance will be repeated by the student. The subjects 12, 13, 14, 15, and 16 may be taken as graduate work.

Subjects 12, 13, 14, and 15 are especially designed to lead up to research work in chemistry, and students who have taken them, with subject 5, are prepared to enter on this line of advanced work. Ample facilities are offered for the successful prosecution of investigations in inorganic and organic chemistry.

Two laboratory hours are equivalent to one term hour, except in the special course in chemistry, for the degree of Bachelor of Science, in which three hours of work in the laboratory count as one term hour. The quantitative and organic laboratories are open from nine to five o'clock daily, Saturday afternoons excepted.

### SUBJECTS.

1.— General Chemistry. Lectures, recitations, and laboratory work. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

2.— Qualitative Analysis. Basic Analysis. *Lectures, laboratory work, and recitations on Tuesday and Thursday from* 2 *to* 5; *also on Saturday*, 8.45 *to* 11.45, *for students of the special course in chemistry* (*first half-year*). ASSISTANT PROFESSOR DURKEE.

3.— Qualitative Analysis. Acids; Analysis of Salts, Commercial and Natural Products. *Lectures, laboratory work, and recitations on Tuesday and Thursday from* 2 *to* 5; *also on Saturday*, 8.45 *to* 11.45 *for students of the special course in chemistry* (*second half-year*).
ASSISTANT PROFESSOR DURKEE.

4.— Quantitative Analysis. Gravimetric and Volumetric Analysis; Analysis of Minerals. *Lectures and laboratory work. Three hours a week.* DR. HARTMAN.

5.— Quantitative Analysis (advanced course). Analysis of Minerals, Ores, Water, Food Products, Organic Analysis. *Laboratory work. Three hours a week.* DR. HARTMAN.

6.— Crystallography and Determinative Mineralogy. Open to students who have taken 1, 2, and 3. *Lectures and laboratory work. Two hours a week* (*first half-year*). MR. WHITEHORNE.

7.— Fire Assay. Open to students who have taken 1, 2, 3, and 4. *Two hours a week* (*second half-year*). MR. WHITEHORNE.

8.— Metallurgy. Lectures and recitations. Open to students who have taken 1. *Three hours a week* (*second half-year*).
ASSISTANT PROFESSOR DURKEE.

9.— Gas Analysis. Lectures and laboratory work. Open to students who have taken 1, 2, 3, and 4. *One hour a week.*
DR. HARTMAN.

10.— Organic Chemistry. Lectures and recitations. Open to students who have taken 1. *Three hours a week* (*first half-year*).
DR. LEIGHTON.

11.— Theoretical Chemistry. Lectures and recitations. Open to students who have taken 1. *Two hours a week* (*second half-year*).
DR. LEIGHTON.

12.— Theoretical and Inorganic Chemistry (advanced course). Lectures and recitations. Open to students who have taken 1 and 11. *Three hours a week (first half-year).* PROFESSOR MICHAEL.

13.— Organic Chemistry (advanced course). Lectures and recitations. Open to students who have taken 1 and 10. *Three hours a week.* PROFESSOR MICHAEL.

14.— Laboratory work in Inorganic Preparations. *Hours to be arranged by the instructors.* PROFESSOR MICHAEL and DR. LEIGHTON.

15.— Laboratory work in Organic Analysis; determination of physical constants and molecular weights; preparation of organic compounds. *Hours to be arranged by the instructors.*
PROFESSOR MICHAEL and DR. LEIGHTON.

16.— Original Investigations in Chemistry. *Hours to be arranged by the instructor.* PROFESSOR MICHAEL.

17.— Discussions on chemical subjects and recent investigations. *One hour a week.*

## BIOLOGY.

### PROFESSOR KINGSLEY.

The work in Biology is differentiated in two lines: one for those desiring a general knowledge of the subject, and one for those who need more thorough work. The first line embraces Biology 1, and may, upon election, be followed by subjects 4, 5, 6, and 7. The other course begins with Biology 2 and 3 and is required of all major students as well as of candidates for the degree of S. B. in the Biology, Medical Preparatory, and General Science courses. These are followed by subjects 5 to 9, subject 8 involving the preparation of a dissertation. Instruction is given by lectures and by laboratory work, the object being to impart the scientific method rather than a large number of unimportant facts. Provision is also made for more extended study and for original investigation, and students will be encouraged to continue their work in this department by means of research on special problems.

The equipment of the department is good. There are three well-lighted laboratories furnished with every requisite for good work, including microscopes, microtomes, reagents, etc., as well as abundant material for illustration and dissection. One of the laboratories is devoted to elementary biology, one to advanced undergraduate work, and one to graduate students. There is also a department library containing over 950 volumes and over 2,300 pamphlets and parts of volumes, while the college library contains the proceedings of many learned societies, both American and foreign. Besides these, proximity to Boston and Cambridge gives easy access to library facilities unequalled in any other part of America.

### SUBJECTS.

1.— General Biology. Lectures, *Tuesday and Thursday at* 11.45; laboratory work, *Tuesday and Thursday from* 2 *to* 4.
PROFESSOR KINGSLEY.

This subject is intended for those who elect their required year of science work in this department and for candidates for the degree of S. B. in chemistry.

2.— General Biology. Lectures, *Monday and Friday at* 11.45; laboratory work, *Tuesday and Thursday from* 2 *to* 4.
PROFESSOR KINGSLEY.

This subject and its continuation, Biology 3, are required of all students electing Biology as their major, and also of candidates for the degree of S. B. in the General Science, Biological, or Medical Preparatory course.

3.— General Biology. Lectures, *Monday and Friday at* 4; laboratory work (four hours), *Monday, Wednesday, and Friday from* 2 *to* 4.
PROFESSOR KINGSLEY.

4.— Elementary Physiology. Lectures, demonstrations, and recitations. *Tuesday, Thursday, and Saturday at* 8.45 (*first half-year*).
PROFESSOR KINGSLEY.

The students in the Medical Preparatory course take this subject at the Medical School.

Subjects 1 to 4 will not be accepted as work for advanced degrees.

5.— Histology; a study of the normal tissues of the vertebrates, including microscopical technique. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.*
PROFESSOR KINGSLEY.

6.— Embryology. One lecture and four hours of laboratory work. *Hours to be arranged by the instructor.* PROFESSOR KINGSLEY.

8.— Special Work. Six hours of laboratory work for the year in the investigation of some special problem. PROFESSOR KINGSLEY.

9.— General Morphology. Three lectures each week upon the anatomy, physiology, and embryology of selected groups, with discussion of special problems. Open only to advanced students. *Hours to be arranged.* PROFESSOR KINGSLEY.

Subjects 5 to 9 are intended for both graduates and undergraduates.

There is required from all students taking Laboratory Courses, a laboratory fee of two dollars per term, payable to the Bursar of the College in advance.

## GEOLOGY.

### PROFESSOR MARSHALL.

The regular work in Geology is preceded by that in Mineralogy, given during the first half-year. Students must have passed in Physics 1 and Chemistry 1 before taking Geology. The instruction is given by lectures and practical work in the mineralogical laboratory, which is furnished with the apparatus needed for the qualitative determination of minerals and the quantitative analysis of the ores of the precious metals. A good collection of minerals systematically arranged in wall-cases is accessible to the student for practical use, while a much larger collection of finer specimens on exhibition in the Museum may also be consulted.

The course in Descriptive Geology given during the second half-year presupposes a knowledge of Mineralogy, and is given by means of text-books and lectures, illustrated by models, charts, maps, and drawings upon the blackboard. Soon after beginning, practical work in Lithology is taken up, by which the student becomes familiar with the constituents of the common rocks. A spectroscope, a lithological microscope, and rock-sectioning apparatus are provided for a more thorough examination of rocks and minerals. The subject of Palæontology is taken up in the latter part of the year, and illustrated by a systematic collection of fossils in the Museum. Excursions to various localities in the neighborhood are offered the students, where the more common geological phenomena can be profitably studied *in situ.*

### SUBJECTS.

1.— Mineralogy; Blow-pipe Analysis. *Tuesday, Thursday, and Saturday at* 9.45 (*first half-year*). PROFESSOR MARSHALL.

2.— Geology, Lithology, and Palæontology. Lectures, recitations, and laboratory work. *Tuesday, Thursday, and Saturday at* 9.45 (*second half-year*). PROFESSOR MARSHALL.

## ASTRONOMY.

1.— Recitations and Lectures, chiefly on Physical and Descriptive Astronomy, with special attention to the later discoveries, and their interpretation as bearing upon the history of the earth. *Tuesday and Thursday at* 11.45 (*first half-year*). PROFESSOR DOLBEAR.

## DRAWING AND SHOPWORK.

PROFESSOR ANTHONY.

### Drawing.

The object of the studies pursued in this department is threefold: first, a development of the theory of technical drawing; second, the acquirement of precision and rapidity in the execution of the work; third, a practical application of these principles to the fluent expression of mechanical ideas by means of graphic language. Practice in the attainment of the first is acquired by Freehand and Geometric Drawing and the study of Descriptive Geometry. By means of progressive problems, in which nothing in the nature of a copy is permitted, the student is advanced to the consideration of point, line, and surface from a purely analytic standpoint. The instruction in Descriptive Geometry is given by means of lectures and recitations, accompanied by frequent examinations in the freehand and instrumental construction of the problems. Rapidity of work being attained only through precision, drawings are required to be executed with the greatest possible care and neatness. The theory and execution of a drawing having been mastered, together with the elements of kinematics, the student is directed to make such applications of these principles to the illustration of mechanism as shall enable him graphically to express his ideas in the most simple and direct manner. The machine drawings are made by such systems as would be required in any well-conducted drafting room, and the most modern methods are employed in the execution of the work and in the forms of graphic expression that may be used. A progressive course in design is pursued preparatory to and in connection with thesis work.

### SUBJECTS.

1.— Descriptive Geometry. Lectures, recitations, and drawing. *Four hours a week (second half-year).*
PROFESSOR ANTHONY and ASSISTANT PROFESSOR DANIELS.

2.— Technical Sketching and Lettering. *Two hours a week (first half-year).*
PROFESSOR ANTHONY and ASSISTANT PROFESSOR DANIELS.

3.— Mechanical Drawing. (See Engineering Courses.) *Three hours a week for the year.* PROFESSOR ANTHONY.

4.— Elements of Mechanism. *Two hours a week (first half-year).*
MR. SANBORN.

5.— Machine Drawing (Elementary). *Two hours a week (first half-year).* MR. SANBORN.

6.— Kinematics. *Two hours a week (second half-year).*
PROFESSOR ANTHONY and MR. SANBORN.

7.— Machine Drawing (Advanced). *Two hours a week (first half-year).* PROFESSOR ANTHONY and MR. C. H. CHASE.

8.— Elements of Design. *Two hours* a week (second half-year).*
PROFESSOR ANTHONY.

9.— Topographical Drawing, with field work, chain, compass, level, and transit. *Three hours a week for the year.*
ASSISTANT PROFESSOR DANIELS.

10.— Machine Design (Advanced). *One hour * a week (first half-year); two hours* a week (second half-year).* PROFESSOR ANTHONY.

### Shopwork.

As the engineer, or draftsman, must have clearly in mind the processes by which a design is to become a reality, it is a primary object of the course to familiarize the student with the various processes of construction and the manipulation of materials. The object is not to produce expert workmen, although a reasonable amount of skill is required, but to give such training as will best serve in the direction and supervision of the work of others. The course is progressive, comprising the subjects enumerated below, and maintaining a close relation with the courses in drawing and design. Much of the work in design is executed in the shop from drawings prepared in the drafting rooms.

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* Each hour represents a two-and-a-half-hour period.

SUBJECTS.

1. Carpentry and Turning. *Two periods* a week (first half-year).*
MR. C. H. CHASE.

2.— Pattern-making and Moulding. *One period a week (second half-year).*
MR. C. H. CHASE.

3.— Forging. *One period a week (second half-year).*
——— ———

4.— Vise and Machine Tools. *Two periods a week (second half-year).*
MR. C. H. CHASE.

5.— Project Work. *Three periods a week (second half-year).*
MR. C. H. CHASE.

## CIVIL AND MECHANICAL ENGINEERING.

### PROFESSOR BRAY.

There are offered in this department such selected subjects from the Engineering Courses as may be profitably pursued by students in the courses in Liberal Arts, who have taken the necessary preliminary work in Mathematics, and who may desire to shape their work with reference to pursuing study in Engineering after graduation. Such students will also find subjects adapted to their plans in the departments of Mathematics, Physics, Chemistry, and Drawing. Fuller details of the work in Engineering will be found in the statement of the full Engineering Courses. For all the subjects given below, Algebra, Geometry, and Trigonometry are an indispensable preparation.

SUBJECTS.

1.— Land Surveying. Lectures, recitations, and field practice. Plotting and calculating. *Two hours a week (first half-year).*
ASSISTANT PROFESSOR DANIELS.

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* Three hours each.

2.— Topography. Lectures, recitations, drawing, and field practice. *Two hours a week (first half-year).*

Assistant Professor Daniels.

This subject must be preceded by 1.

3.— Elementary Mechanics. *Three hours a week (second half-year).*

Mr. Sanborn.

4.— City and Mining Surveying. Recitations, field and office work. *Three hours a week (second half-year).*

Assistant Professor Daniels.

5.— Railroad Surveying. Field practice and office work; drawing and calculating. *Two hours a week (first half-year).*

Assistant Professor Daniels.

Subjects 4 and 5 must be preceded by 1 and 2.

6.— Steam Enginery; practice in the management of engines and boilers, valve-setting, etc. *Three hours a week (first half-year).*

Mr. Sanborn.

7.— Thermo-dynamics. *Three hours a week (second half-year).*

Mr. Sanborn.

8.— Applied Mechanics. *Three hours a week (second and first half-years).* Professor Bray.

Subjects 6, 7, and 8 must be preceded by Calculus.

9.— Applied Mechanics (Laboratory). *One hour a week (first half-year).* Professor Bray.

10 — Steam Engineering. Mechanics of the Steam Engine. Dimensions and proportions of engines and boilers; valve gears; engine testing; preparation of designs and specifications. *Three hours a week for the year.* Professor Bray.

11.— Mechanical Laboratory. *Four hours a week (second half-year).* Professor Bray.

This must be preceded by Mechanical Drawing and Engineering 6, 7, and 8.

12.— Roads and Railroads, to be taken with 5. *Three hours a week (first half-year); two hours a week (second half-year).*

Professor Bray.

13.— Hydraulics. *Three hours a week (first half-year).*

Professor Bray.

14.— Bridges and Roofs. *Two hours a week (second half-year).*

Assistant Professor Daniels.

15. — Masonry Construction. *Three hours a week (second half-year).* PROFESSOR BRAY.

Subjects 13, 14, and 15 must be preceded by 9.

16. — Marine Engineering. PROFESSOR BRAY.

This subject is open as an elective to those students who are prepared for it and may be taken by regular students in Mechanical Engineering who wish to specialize in their Senior year. Students in Marine Engineering are required to spend their summer vacations in the engine department of a steam vessel, and on the completion of their course and one year's service in the engine department of a steam vessel, may receive United States licenses to serve as engineers on steam vessels.

## ELECTRICAL ENGINEERING.

PROFESSOR HOOPER.

To students in the College of Liberal Arts who may desire to elect advanced work in Electricity, the following subjects are open: Subjects 1, 2, and 3 require a good working knowledge of Algebra and Trigonometry, while 4 and 5 require some acquaintance with Calculus and Differential Equations.

### SUBJECTS.

1. — Dynamo-Electric Machinery. Recitations and lectures. *Three hours a week (second half-year).* PROFESSOR HOOPER.

2. Electrical Calculations. *Two hours a week (second half-year).* PROFESSOR HOOPER.

3. — Electrical Laboratory (advanced course). *Three hours a week for the year.* PROFESSOR HOOPER.

4. — Electricity (advanced work). Alternating currents. *Four hours a week (first half-year); three hours a week (second half-year).* PROFESSOR HOOPER.

5. — Theories of Electricity and of Magnetism. *Three hours a week for a half-year.* PROFESSOR HOOPER.

## MUSIC.

PROFESSOR LEWIS.

The department offers opportunities to gain a knowledge of musical history and of the principles of composition, as a basis for practical work in music or in musical criticism. The courses in Harmony and in General History of Music may well be taken by students who wish to cultivate their appreciation of music, but have no intention of preparing themselves for professional work in the art.

### SUBJECTS.

1. — Harmony. Lectures and practical work, based on Jadassohn's Manual of Harmony. Collateral reading concerning the lives of Bach, Händel, Haydn, Mozart, and Beethoven. *Tuesday at* 3, *Thursday from* 2 *to* 4. PROFESSOR LEWIS.

An elementary knowledge of piano playing is required of those who take this subject.

2. — Counterpoint, Simple and Double. Lectures and practical work, based on the manuals of Jadassohn, Bridge, and others. Collateral reading concerning the lives of Schubert, Schumann, Mendelssohn, and Wagner. *Three hours a week as arranged by the instructor.* PROFESSOR LEWIS.

A thorough theoretical knowledge of harmony, and much facility in the harmonization of basses and choral melodies, are required of those who take this course. A full equivalent of Music 1 must have been done by students who wish to begin their college work with Music 2.

[3. — Fugue, Canon, Musical Form, and the Elements of Orchestration. Lectures and practical work, with various manuals for class use and reference. *Three hours a week for the year.*]

[Will be given in 1898–99.]

Students who elect this subject must have attained grade A or B in Music 2, and must have given evidence of talent in melodic invention. Those who are admitted to the course are required to attend regularly during the year the public rehearsals or concerts of the Boston Symphony Orchestra, and at least eight concerts of chamber-music, as prescribed by the instructor.

4. — General History of Music from the earliest times to the present day, with especial attention to the period since the death of Palestrina. Lectures, with various treatises for reference. *Monday, Wednesday, and Friday at* 10.45 (*second half-year*).

PROFESSOR LEWIS.

[5. — Special studies in Musical History, in Musical Criticism, or in the development of Musical Form.]

[Will be given in 1898–99.]

An equivalent of the work of Music 4 and an ability to read with facility German and French are required of students who elect this subject. The same requirement of concert attendance as for Music 3 is made for Music 5. The course may be given in lectures, or may consist of individual work of students under the direction of the instructor.

6. — The Phenomena of Sound in their relation to music and musical instruments. Lectures and experiments. *One hour a week for the second half-year.* PROFESSOR DOLBEAR.

The first half-year's work in Physics 1 must have been done by those who elect this subject.

## PHYSICAL TRAINING.

### MR. STROUD AND MISS CARVILL.

Regular exercise in the gymnasium is required three hours a week of all undergraduate students for the two years following entrance, from the middle of November to the middle of March. The work in physical training is optional during the remaining years of the course. The aim of the department is to secure better carriage and more symmetrical development of the body, and to develop a fuller appreciation of the value of systematic exercise. The work prescribed for each student depends on the physical condition, as determined by careful medical examination, measurements, and strength tests. The special exercises of each student are directed by the instructor; the general exercises are in classes. The class work consists of free movements, exercises with wands and light dumb-bells, and on the parallel bars, vaulting-bar, and vaulting-horse. Attention is also given to running, jumping, vaulting, and other healthful athletic sports. It is the intention in all cases to make the exercises of such a character that the weakest as well as the strongest person can perform them with profit.

| | X. — 2.00. | XII. — 3.00. | XIV. — 4.00. | |
|---|---|---|---|---|
| **Tuesday and Thursday Afternoons.**<br>(Even number groups.) | English 1 (Tuesday).<br>Oratory 3 (Thursday).<br>English Literature 5 (i Tu. and Th.).<br>English Literature 9 (Tu. and Th.).<br>Physics 6 (i).<br>Physics 7 (ii).<br>Chemistry 2 (i).<br>Chemistry 3 (ii).<br>Biology 1, 2 (laboratory).<br>Music 1 (Thursday). | Chemistry 2 (i).<br>Chemistry 3 (ii).<br>Biology 1, 2 (laboratory).<br>Music 1. | Oratory 2 (Thursday).<br>English Literature 12 (Tuesday).<br>Chemistry 2 (i).<br>Chemistry 3 (ii). | |

# Tabular View of Program Groups.

The arrangement of such subjects as have fixed hours assigned to them is shown in the subjoined table. Hours for laboratory work and for subjects not here indicated are to be arranged with the instructors. Subjects in the same group cannot be taken simultaneously.

The groups assigned to Monday, Wednesday, and Friday are indicated by the odd number Roman numerals; those assigned to Tuesday, Thursday, and Saturday, by the even number Roman numerals.

The small Roman numerals (i) and (ii), following the names of half-subjects, indicate the half year in which they are given.

| | | | | |
|---|---|---|---|---|
| Monday, Wednesday, Friday. (Odd number groups.) | I.—8.45. | III.—9.45. | V.—10.45. | VII.—11.45. |
| | French 3.<br>French 4.<br>Political Science 5.<br>Mathematics 1 (first division). | English 3 (Monday and Friday).<br>German 3.<br>Philosophy 1 (i), 2 (ii).<br>Mathematics 1 (second division). | English 2.<br>English Literature 1 (Monday).<br>History 3.<br>Physics 1.<br>Music 4. | English 8 (i).<br>English 9 (ii).<br>French 6.<br>Latin 3, 4.<br>Greek 1.<br>History 7.<br>Mathematics 3 (i).<br>Mathematics 5 (ii).<br>Physics 3 (ii).<br>Biology 2 (lectures Mon. and Fri.). |
| | IX.—2.00 | XI.—3.00. | XIII.—4.00. | |
| | Oratory 1 (Wednesday, *b*).<br>Greek 2.<br>Biology 3 (laboratory). | English Literature 2.<br>English Literature 7 (ii).<br>French 5.<br>Philosophy 7 (i).<br>Biology 3 (laboratory). | English Literature 14 (Friday).<br>German 5.<br>German 7 (Monday and Friday).<br>Greek 9, 10, 11 (Wed. and Fri.).<br>Biology 3 (lectures Mon. and Fri.). | |
| Tuesday, Thursday, Saturday. (Even number groups.) | II.—8.45. | VI.—9.45. | VI.—10.45. | VIII.—11.45. |
| | English 4 (i, Tu. and Thurs.).<br>German 2.<br>French 2.<br>Latin 8, 9.<br>Political Science 1<br>Biology 4 (i). | German 1.<br>French 1.<br>Latin 2.<br>Greek 1.<br>Political Science 2 (i).<br>Political Science 3 (ii).<br>Geology 1 (i).<br>Geology 2 (ii).<br>Philosophy 5 (i). | Oratory 1 (Saturday, *a*).<br>English Literature 10.<br>Italian 1.<br>Latin 1.<br>Philosophy 3, 4.<br>Philosophy 6 (i).<br>Philosophy 8 (i).<br>Philosophy 9 (ii), 10, 11.<br>History 1. | German 4.<br>Greek 3.<br>Greek 4.<br>History 8 (i).<br>Mathematics 2 (ii).<br>Biology 1 (lectures Tues. and Thurs.).<br>Astronomy 1 (i, Tues. and Thurs.). |
| Tuesday and Thursday Afternoons. (Even number groups.) | X.—2.00. | XII.—3.00. | XIV.—4.00. | |
| | English 1 (Tuesday).<br>Oratory 3 (Thursday).<br>English Literature 5 (i Tu. and Th.).<br>English Literature 9 (Tu. and Th.).<br>Physics 6 (i).<br>Physics 7 (ii).<br>Chemistry 2 (i).<br>Chemistry 3 (ii).<br>Biology 1, 2 (laboratory).<br>Music 1 (Thursday). | Chemistry 2 (i).<br>Chemistry 3 (ii).<br>Biology 1, 2 (laboratory).<br>Music 1. | Oratory 2 (Thursday).<br>English Literature 12 (Tuesday).<br>Chemistry 2 (i).<br>Chemistry 3 (ii). | |

# Courses in Science.

The courses outlined below, in General Science, Biology, Chemistry, and Medical Preparatory studies, lead to the degree of Bachelor of Science, are entered through Entrance Examination Group V, and are intended for graduates of general high schools, who wish to prepare themselves for specialized scientific work. Like the engineering courses, they are placed upon a technical basis, and far less latitude is allowed the student in the choice of subjects than in the courses in Arts and Philosophy, the election being made when the course is chosen. The programs of these courses are given below. Fuller statements of the different subjects will be found under the corresponding numbers in the statements of the Departments of Instruction, pages 67 to 102.

## COURSE IN GENERAL SCIENCE.

PROFESSOR KINGSLEY.

### Freshman Year.

*English* 1 (see page 68).
*German* 1 or 2.
*French* 2 or 1.
*Physics* 1.
*Biology* 2.
*Physical Training.*

### Sophomore Year.

*English* 2 (see page 68).
*German* 2, or *German* 3 (first half-year), and *Biological German* (second half-year).
*French* 2 (if German 3 is taken).
*Biology* 3.
*Physics* 2 (first half-year) and 4 (second half-year).
*Mathematics* 1 (taken this year by those entering with French).
*Physical Training.*

### Junior Year.

*German* 3 (first half year) and *Biological German* (second half-year).
*Chemistry* 1.
*Mathematics* 1 (for those entering with German).
*Physiology* (first half-year).
*Embryology* (second half-year).
*Mechanics* (second half-year).
*Elective, eleven hours.*

### Senior Year.

*Chemistry* 2.
*Chemistry* 10.
*Philosophy* 2 and 3.
*Geology* 1 and 2.
*Systematic Biology* (second half-year).
*Surveying* (first half-year).
*Elective, three hours.*

## SPECIAL COURSE IN BIOLOGY.

Professor Kingsley.

### Freshman Year.

As in the Course in General Science.

### Sophomore Year.

*English* 2 (see page 68).
*German* 2, or *German* 3 (first half-year), and *Biological German* (second half-year).
*French* 2, or *elective six hours*, for those entering with French.
*Biology* 3.
*Chemistry* 1.
*Physical Training.*

### Junior Year.

*German* 3 (first half-year) and *Biological German* (second half-year).
*Physiology* (first half-year).
*Histology* (first half-year).
*Embryology* (second half-year).
*Chemistry* 2.
*Chemistry* 10.
*Elective, eight hours* (*fourteen* for those entering with German).

### Senior Year.

*Geology* 1 and 2.
*General Morphology.*
*Human Anatomy* at Tufts Medical School.
*Special research* in Biology, including *thesis*, twelve hours.
*Elective, five hours.*

## SPECIAL COURSE IN CHEMISTRY.

ASSISTANT PROFESSOR DURKEE.

### Freshman Year.

*Chemistry* 1.
*Mathematics* 1.
*German* 1 or 2.
*English* 1 (see page 68).
*Physics* 1.
*Drawing.*
*Physical Training.*
*Elective, three hours* (first half-year).

### Sophomore Year.

*Chemistry* 2 and 3.
*Chemistry* 4.
*Chemistry* 10.
*Physics* 4.
*English* 2 (see page 68).
*Chemistry* 11.
*German* 2 or *French* 1.
*Physical Training.*

### Junior Year.

*Chemistry* 12.
*Chemistry* 13.
*Chemistry* 5.
*Biology* 1.
*Physiology* (first half-year).
*Chemistry* 8.
*Chemistry* 6.
*Chemistry* 14 and 15.
*Elective, three hours* (second half-year).

### Senior Year.

*Elective* (first half-year).
*Gas Analysis* (first half-year).
*Fire Assay* (second half-year).
*Political Science* 1.
*Chemistry* 13 (continued).
*Research* and *thesis*, four hours (first half-year); ten hours (second half-year).

## MEDICAL PREPARATORY COURSE.

PROFESSOR KINGSLEY.

### Freshman Year.

As in the Course in General Science.

### Sophomore Year.

As in the Special Course in Biology.

### Junior Year.

*Chemistry* 2.
*Chemistry* 10.
*Embryology* (second half-year).
*General Morphology.*
*Philosophy* 2 and 3.
*Shop Work* (second half-year).
*German* 3 (first half-year); *Biological German* (second half-year).
*Elective, six hours* (*twelve hours* for those entering with German).

### Senior Year.

*Political Science* 1.
*Philosophy* 5.
*Chemistry* 3.
*Human Anatomy*, *Histology*, and *Physiology* at Tufts Medical School.
*Elective, six hours.*

# Engineering Courses.

Three courses in Engineering are provided, each occupying four years, and leading to the degree of Bachelor of Science.

The course in Electrical Engineering leads to the degree of Bachelor of Science in Electrical Engineering, which is granted after the satisfactory completion of the work prescribed. The same degree in Civil or Mechanical Engineering is given on similar conditions to students who have pursued the course in Civil or Mechanical Engineering. It is believed that four years spent mainly upon technical subjects, yet providing opportunity for such language study as will enable the student to become familiar with foreign books of scientific value, will furnish a solid foundation for advanced theoretical attainment and professional skill.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain either of the degrees mentioned above upon the completion of one year's graduate study.

English. — The required work in English extends through the first two years, and is identical with the work for the same years in the course for the degree of Bachelor of Arts, as described on page 68. The elective subjects in the Department of English are open to students in the Science and Engineering Courses, so far as their program allows.

Modern Languages. — An elementary knowledge of French or German (see pages 43 and 44) is required of all candidates for admission to the Engineering Department. While each student will be assigned, upon entrance, to such class as his proficiency warrants, it is in general expected that those who present merely an elementary requirement will continue through the Freshman year the study of the language presented. At the end of this period, students who have acquired the ability to utilize for research works in the language hitherto studied may begin the study of the alternate language; but no one will be permitted to begin the study of German later than the Sophomore year, except by special permission, and with the understanding that the requirement of nine term hours on the subject is to be met by extra work. The courses in French and German are, in general, similar to those described on pages 72 to 76 (general statement).

Students in the three branches of Engineering follow the same plan of work for the first two years.

## FRESHMAN YEAR.

### First Term.

**Mathematics.** — Advanced Algebra; Spherical Geometry; Plain Trigonometry. *Six hours a week.* MR. JORDAN.

**Mechanical Drawing.** — Geometric Drawing; Orthographic Projection. *Three hours a week.* PROFESSOR ANTHONY.

**Freehand Drawing.** — Lettering and Technical Sketching. *Two hours a week.*
PROFESSOR ANTHONY and ASSISTANT PROFESSOR DANIELS.

**Shop Work.** — Carpentry; Turning; Pattern-Making. *Two hours a week.* MR. C. H. CHASE.

**English.** — English 1. *Tuesday at* 2. PROFESSOR SHIPMAN.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Spherical Trigonometry. *Two hours a week.*
MR. JORDAN.

**Mechanics.** — Lectures on Elementary Mechanics, with problems *Three hours a week.* MR. SANBORN.

**Mechanical Drawing.** — Orthographic, Isometric, and Oblique Projection; Screw Threads; Bolts and Nuts; Tracing and Blue-printing. *Three hours a week.* PROFESSOR ANTHONY.

**Descriptive Geometry.** — Lectures, recitations, and drawing. *Four hours a week.*
PROFESSOR ANTHONY and ASSISTANT PROFESSOR DANIELS.

**Shop Work.** — Pattern-Making; Moulding. *One hour a week.*
MR. C. H. CHASE.

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* See remarks on Modern Languages, page 107.

**English.** — English 1. *Tuesday at 2.* PROFESSOR SHIPMAN.

**French or German.** — *Three hours a week.**

## SOPHOMORE YEAR.

### First Term.

**Mathematics.** — Analytic Geometry. *Three hours a week.* MR. WREN.

**Drawing.** — Machine Drawing. *Two hours a week.* MR. SANBORN.

**Elements of Mechanism.** — *Two hours a week.* MR. SANBORN.

**Physics.** — Properties of Matter; Heat; Light; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Chemistry.** — Inorganic Chemistry, with recitations, lectures, and laboratory work. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**Surveying.** — Recitations and lectures. Field practice; plotting and calculating. *Two hours a week.* ASSISTANT PROFESSOR DANIELS.

**English.** — English 2. *Monday, Wednesday, and Friday* at 11.45. MR. WHITTEMORE.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus. *Three hours a week.* MR. WREN.

**Drawing.** — Kinematics. *Two hours a week.* PROFESSOR ANTHONY and MR. SANBORN.

**Shop Work.** — Blacksmithing; Forging of Iron and Steel. *One hour a week.* MR. C. H. CHASE.

**Physics.** — Sound; Electricity; Daniell's Principles of Physics. *Three hours a week.* PROFESSOR DOLBEAR.

**Physical Laboratory.** — Mechanics; Sound, Heat, and Light. *Three hours a week.* MR. H. G. CHASE.

**English.** — English 2. *Monday, Wednesday, and Friday* at 11.45. MR. WHITTEMORE.

**Chemistry.** — Inorganic. Recitations, lectures, and laboratory work. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**French or German.** — *Three hours a week.**

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* See remarks on Modern Languages, page 107.

## ELECTRICAL ENGINEERING.

The aim of this course is to fit men to deal intelligently with all electrical problems likely to be presented to the practical engineer. With this end in view, Mathematics and Drawing are pursued through nearly the entire course. Physics and Mechanics, both pure and applied, receive much attention, while more than half of the fourth year is devoted to the study of Electricity, by means of practical work in the electrical laboratory, together with recitations and lectures on the principles involved. The purely electrical work extends over the Junior and Senior years of the course; the Junior year being devoted to the more elementary theory and the practice of the simpler tests and measurements; the Senior year to the more advanced theory and the practice of the more complex tests and measurements.

In the electrical laboratory each student is required to complete a fixed program of work. In the Junior year this consists of the work indicated in Stewart and Gee's Practical Physics, Vol. II. In the Senior year it includes among other things: the photometry of arc and incandescent lamps; the magnetic properties of the various irons; insulation and conductivity tests; efficiencies, characteristic curves, and magnetic leakage of dynamos, motors, and transformers; efficiency, capacity, etc., of accumulators; preparation of thesis.

The laboratory is well equipped with testing instruments, including the various types of ammeters, voltmeters, reflecting galvanometers, resistance boxes; standards of electromotive force, resistance, and capacity; Thomson's standard balances; electro-dynamometer, etc. The more delicate instruments are provided with substantial brick piers to prevent vibration.

The dynamo room is equipped with a Sturtevant engine of twenty-five horse power and six dynamos, and several motors, including a pair of railway motors; and is provided with counter-shafts, dynamometers, tachometer, etc. A sixty-thousand watt hour storage battery furnishes ample power for all work at any time when the dynamos are not running.

Graduates of this course may obtain the degree of Electrical

Engineer after satisfying certain conditions which are fully described in the Graduate Department statement in succeeding pages.

The plan of work for the Junior and Senior years is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* MR. WREN.

**Drawing.** — Advanced Machine Drawing. *Three hours a week.* PROFESSOR ANTHONY and MR. C. H. CHASE.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Three hours a week* MR. H. G. CHASE.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. H. G. CHASE.

**Steam Enginery.** — Practice in management of engines and boilers; adjusting parts; valve setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Elements of Machine Design. *Two hours a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.* PROFESSOR BRAY.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and lectures. *Two hours a week.* PROFESSOR HOOPER.

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*See remarks on Modern Languages, page 107.

Thompson's Dynamo Electric Machinery; Dynamo Plans and Calculations. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.* MR. C. H. CHASE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Machine Design and Thesis Drawing. *One hour a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure; Torsion; Long Columns; Arches; Special Problems. *Three hours a week.* PROFESSOR BRAY.

**Electricity.** — Alternating Currents; Bedell and Crehore, Fleming. Recitations. *Four hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Management of Electrical Machinery; testing dynamos, motors, transformers, and accumulators; testing lines, conductors, and lamps. *Three hours a week.* PROFESSOR HOOPER.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.* PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Machine Design and Thesis Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**Electricity.** — Alternating Currents, Fleming; Theory of Electricity. *Three hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Special Investigations. PROFESSOR HOOPER.

**Telegraph and Telephone.** — Lectures. *Two hours a week.*
PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## MECHANICAL ENGINEERING.

It is the aim of this department to so instruct the student in the various subjects that he will be enabled to apply scientific principles to the design of a machine or to the proper arrangement of any mechanical plant. In the earlier part of his studies the work common to all engineering courses embraces the careful study of mathematics, physics, and chemistry, which have important bearing upon his subsequent study of the properties of materials used by the engineer. Elementary drawing also occupies a prominent place in the course and is followed by descriptive geometry. The latter is further developed in its application to practical problems and to the systematic study of mechanism.

Steam Enginery is taken by all engineers; it includes the study of the principles involved in the generation and application of power, the management of a steam engine and boiler, the making of steam joints, setting of valves, and so forth. The course in Thermodynamics is begun after the student has become well versed in the methods of the calculus, the principles being developed by mathematical treatment. It consists of the mechanical theory of heat, properties of gases, saturated and superheated steam, theory of the injector, and laws of the flow of steam. The subject is taught by text-book, lectures, and laboratory. Steam Engineering is taken by Seniors. It includes the study of the steam engine, compound and multiple expansion, and of steam boilers of various types; the dimensions for developing a required power; the material and sizes of parts requisite for strength and endurance; the effect and balance of reciprocating parts, and the various kinds of valve motions. Practice is given in engine and boiler testing and a design with working drawings is required of each student.

In this course students who so desire may make a special study of Marine Engineering, which includes the principles of the propelling instrument and powering of vessels. Students in Marine Engineering will spend their vacations in the engine room of a steam vessel.

Students in Mechanical Engineering pursue a very complete course of shop work in the new shops of the College, beginning with carpentry and wood turning, and followed by moulding, pattern making, blacksmithing, and machine work.

The plan for the last two years of the course in Mechanical Engineering is as follows: —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Three hours a week.* MR. WREN.

**Drawing.** — Advanced Machine Drawing. *Two hours a week.* PROFESSOR ANTHONY and MR. C. H. CHASE.

**Electricity.** — Units; Theory or Measurements; Electrical Calculations. Recitations and lectures. *Three hours a week.* MR. H. G. CHASE.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. H. G. CHASE.

**Steam Enginery.** — Practice in Management of Engines and Boilers; Adjusting Parts; Valve Setting. *Three hours a week.* MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.* ASSISTANT PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Drawing.** — Elements of Mechanism, Machine Design. *Two hours a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moments of Inertia. *Three hours a week.* PROFESSOR BRAY.

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*See remarks on Modern Languages, page 107.

**Mechanical Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electricity.** — Theory of Measurements; Electrical Calculations; Wiring. Recitations and Lectures. *Two hours a week.* PROFESSOR HOOPER.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Thermodynamics.** — Principles of Mechanical Theory of Heat. *Three hours a week.* MR. SANBORN.

**Shop Work.** — Vise and Machine Tools. *Two hours a week.* MR. C. H. CHASE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Machine Design and Thesis Drawing. *One hour a week.* PROFESSOR ANTHONY.

**Applied Mechanics.** — Strength of Materials; Flexure; Torsion; Long Columns; Arches; Special Problems. *Three hours a week.* PROFESSOR BRAY.

**Steam Engineering.** — Mechanics of the Steam Engine; Dimensions and Proportions of Engines and Boilers; studies of different types. *Three hours a week.* PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.* PROFESSOR BRAY.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.* PROFESSOR BROWN.

**Drawing.** — Machine Designs and Thesis Drawing. *Two hours a week.* PROFESSOR ANTHONY.

**Mechanical Laboratory.** — Testing Engines and Boilers; Efficiency of Machines; Power required to Drive Machines; Calibrating Instruments. PROFESSOR BRAY.

**Hydraulic Laboratory.** — Measuring Discharge through Orifices, Pipes, and over Weirs; Efficiency of Motors; Discharge in Rivers; Determination of Coefficients. PROFESSOR BRAY.

**Steam Engineering.** — Efficiency of Engines and Boilers; Design of Engine for Given Power; Dimension of Parts; Study of Valve Gears; Specifications. *Three hours a week.* PROFESSOR BRAY.

**Telegraph and Telephone.** — Lectures. *Two hours a week.*
PROFESSOR DOLBEAR.

**Preparation of Thesis.**

## CIVIL ENGINEERING.

The course of study in this department has been arranged with reference to its disciplinary and educational value, as well as to the general and technical knowledge which it imparts, and has constantly in view the training of competent designers and constructors. Instruction is given by means of text-books and lectures, laboratory work, and practice in the drafting-room and in the field.

In surveying, the use and adjustment of instruments are taught by work in the field, so that students become familiar with the methods of land, topographical, city, railroad, and mine surveying. The work in Plane Surveying is taken in the first term of the Sophomore year and is for all Engineers. It consists of recitations, field work, and drafting-room practice in plotting from field notes, calculating, laying out, and dividing land. This is followed for students in this course by Topography, which embraces extended field practice with transit, stadia, level, and plane-table, and pen and colored topographical drawing, and modelling. A course of hydrographical, railroad, and city surveying follows Topography, and is designed to teach the student accuracy with rapidity in the instrumental work necessary for carrying out extended engineering enterprises. It embraces the preliminary survey, the location, and the staking out for construction.

The work in the drafting-room begins with plane geometrical problems, freehand drawing, and lettering; followed by mechanical drawing, problems in descriptive geometry, shades and shadows, plotting from field notes of actual surveys, topographical drawing and map-making. The production of finished plans is required; also the drawing of details of engineering structures and machines necessary for the construction of railroads, sewer systems, steam and electric plants.

The work in Road Engineering includes study in the classroom of the principles governing the economical location of railroads and highways, as well as consideration of the cost of their construction, maintenance, and operation. The field-work embraces the survey and location of a line of railroad, and includes setting slope-stakes, locating turnouts, culverts, and bridges, with the preparation of specifications and estimates.

In Descriptive Geometry the instruction is given by means of text-books and lectures, illustrated by diagrams and models. The problems are worked out upon the blackboard, and many original questions are added, to make the student thoroughly familiar with this branch of mathematics.

Instruction in the Steam Engine is given by means of text-books, lectures, drawings, and practice with engines and boilers. Frequent reference is made to modern examples of engines and boilers of various kinds. Students have practice in applying the steam indicator for the determination of the power developed by the engine.

In Applied Mechanics the student is taught to design structures and machines, beginning with the study of forces, centre of gravity, moment of inertia, determination of stresses in frames and trusses, including investigation of the strength and elasticity of materials, theoretically in the class-room, and experimentally in the testing laboratory. A ready knowledge of mathematics is essential in this department, since frequent use is made of analytic geometry, trigonometry, and the calculus.

The subject of Construction is taught by recitations, lectures, laboratory work, and by the study of approved examples and reports of engineers and inspectors of work under construction. Investigation is made of the characteristic properties, strength, and durability of natural and artificial building materials. The appliances and machinery required in the construction of walls, dams, piers and abutments, arches and tunnels, are considered, and the student is made familiar with the methods of constructing foundations on land and under water, and the uses of piles of various kinds.

The work in Hydraulics embraces theoretical and experimental or applied hydraulics. Numerous problems are solved by the student, requiring the application of formulæ to cases of frequent occurrence in practice. A study of the laws governing the pressure and flow of water in pipes over weirs, through tubes, etc., is followed by numerous problems, requiring, on the part of the students, the application of formulæ to cases of frequent occurrence in practice. The student is taught the use of instruments in measuring the flow in rivers, and has laboratory practice with weirs, tanks, orifices, etc., and in measuring efficiency of hydraulic motors. A study is made of the published reports of engineers upon the experimental determination of the flow in conduits and sewers.

The instruction in Bridge Designing is based upon the analytic and graphic computation of stresses, as taken up in Applied Mechanics. The principles therein developed through the study of the strength and elasticity of materials are applied to computation for determining the several parts of highway and railroad bridges.

Students in Civil Engineering are required to take workshop practice in carpentry, wood turning, pattern making, moulding, and blacksmithing.

Graduates of this course may obtain the degree of Civil Engineer on complying with the requirements defined in the statement of the Graduate Department. The plan of the last two years of the course is as follows : —

## JUNIOR YEAR.

### First Term.

**Mathematics.** — Differential and Integral Calculus (advanced course).
*Three hours a week.* MR. WREN.

**Topography.** — Topographical Surveying; Pen and Colored Topographical Drawing. Field and office work. *Two hours a week.*
ASSISTANT PROFESSOR DANIELS.

**Electricity.** — Units; Theory of Measurements; Electrical Calculations. Recitations and lectures. *Two hours a week.*
MR. H. G. CHASE.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* MR. H. G. CHASE.

**Steam Enginery.** — Practice and Management of Engines and Boilers; Adjusting Parts; Valve Setting. *Three hours a week.*
MR. SANBORN.

**Chemistry.** — Qualitative Analysis. *Three hours a week.*
ASSISTANT PROFESSOR DURKEE.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

**French or German.** — *Three hours a week.**

### Second Term.

**Mathematics.** — Differential and Integral Calculus (advanced course). *Two hours a week.* MR. WREN.

**Applied Mechanics.** — Statics; Centre of Gravity; Friction; Work and Energy; Moment of Inertia. *Three hours a week.*
PROFESSOR BRAY.

**Applied Mechanics Laboratory.** — Testing Materials, — tension, compression, bending, torsion; Transmission of Power; Balancing Machinery. *One hour a week.* PROFESSOR BRAY.

**Electrical Laboratory.** — Magnetic and Electrical Measurements. *Two hours a week.* PROFESSOR HOOPER.

**Masonry Construction.** — Preparation and Use of Materials; Foundations; Dams; Walls; Abutments; Arches. *Three hours a week.*
PROFESSOR BRAY.

**Surveying.** — City and Mining Surveying. Text-Book with field practice and office work. *Three hours a week.*
ASSISTANT PROFESSOR DANIELS.

**English Literature.** — *One hour a week.* PROFESSOR MAULSBY.

## SENIOR YEAR.

### First Term.

**Mathematics.** — Differential Equations. *Two hours a week.*
PROFESSOR BROWN.

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* See remarks on Modern Languages, page 107.

**Drawing.** — Structural Design. *One hour a week.*
PROFESSOR BRAY.

**Applied Mechanics.** — Strength of Materials; Flexure, Torsion; Long Columns, Arches; Special Problems. *Three hours a week.*
PROFESSOR BRAY.

**Hydraulics.** — Theoretical Hydraulics; Flow through Pipes, over Weirs, in Canals and Rivers; Measurement of Water Power; Hydraulic Motors; Naval Hydraulics. *Three hours a week.*
PROFESSOR BRAY.

**Roads and Railroads.** — Laying-out, Construction, and Maintenance of Highways. Method of Conducting Preliminary Survey and Trial Location for a Railroad. *Three hours a week.* PROFESSOR BRAY.

**Surveying.** — Practice in Railroad Surveying; Locating Curves, Switches, and Frogs; Laying out Mechanical Structures; Staking out for Construction. *Two hours a week.*
ASSISTANT PROFESSOR DANIELS.

**Political Economy.** — *Three hours a week.* PRESIDENT CAPEN.

### Second Term.

**Mathematics.** — Least Squares. *Two hours a week.*
PROFESSOR BROWN.

**Drawing.** — Structural Design. *One hour a week.*
PROFESSOR BRAY.

**Railroads.** — Economic Theory of Railroad Location. *Three hours a week.* PROFESSOR BRAY.

**Bridges and Roofs.** — Theory and Practice of Designing. *Three hours a week.* ASSISTANT PROFESSOR DANIELS.

**Telegraph and Telephone.** — Lectures. *Two hours a week.*
PROFESSOR DOLBEAR.

**Preparation of Thesis.**

# TABULAR VIEW OF ENGINEERING COURSES.

## FRESHMAN YEAR.

| No. of Subject. | SUBJECT. | No. of exercises per week. | Must be preceded by. |
|---|---|---|---|
| | FIRST TERM. | | |
| 1 | Mathematics | 6 | — |
| 2 | Mechanical Drawing | 3 | — |
| 3 | Technical Sketching and Lettering | 2 | — |
| 4 | Carpentry and Turning | 2 | — |
| 5 | French or German | 3 | — |
| 6 | English | 1 | — |
| | SECOND TERM. | | |
| 7 | Mathematics | 2 | 1 |
| 8 | Mechanical Drawing | 3 | 2 |
| 9 | Descriptive Geometry | 4 | 1, 2 |
| 10 | Moulding and Pattern Making | 1 | 4 |
| 11 | French or German | 3 | 5 |
| 12 | English | 1 | 6 |
| 13 | Mechanics | 3 | 7* |

*May be taken at the same time, but cannot be taken before 7.

## SOPHOMORE YEAR.

| | | | |
|---|---|---|---|
| | FIRST TERM. | | |
| 14 | Analytical Geometry | 3 | 7 |
| 15 | Elements of Mechanism | 2 | 8, 9 |
| 16 | Machine Drawing | 2 | 8, 3 |
| 18 | French or German | 3 | 11 |
| 19 | Physics | 3 | 13 |
| 20 | Chemistry, General and Laboratory | 3 | — |
| 21 | Surveying | 2 | 7 |
| | English | 3 | |
| | SECOND TERM. | | |
| 22 | Calculus | 3 | 14 |
| 23 | Drawing | 2 | 15, 16 |
| 24 | Forging | 2 | — |
| 25 | French or German | 3 | 18 |
| 26 | English | 3 | 12 |
| 27 | Physics, Lectures | 3 | 19 |
| 28 | Physics, Laboratory | 3 | 19 |
| 29 | Chemistry, General and Laboratory | 3 | 20 |

## JUNIOR YEAR.

| No. of Subject. | SUBJECT. | No. of exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 30 | Calculus | 3 | E. M. C. | 22 | — |
| 31 | Drawing, Machine | 2 | E. M. | 23 | — |
| 32 | Topography | 2 | C. | 21 | — |
| 33 | French or German | 3 | E. M. C. | 25 | — |
| 34 | Electricity, Recitations | 3 | E. M. C. | 14, 27, 28 | — |
| 35 | Electricity, Laboratory | 2 | E. M. C. | 14, 27, 28 | — |
| 36 | Steam Enginery | 3 | E. M. C. | 27 | — |
| 37 | Qualitative Analysis | 3 | E. M. C. | 29 | — |
| 38 | English Literature | 1 | E. M. C. | — | — |
| | SECOND TERM. | | | | |
| 39 | Calculus | 2 | E. M. C. | 30 | — |
| 40 | Vise, and Machine Work | 2 | E. M. | — | — |
| 41 | Applied Mechanics, Recitations | 3 | E. M. C. | 30 | 39, 42 |
| 42 | Applied Mechanics, Laboratory | 1 | E. M. C. | — | 41 |
| 43 | Electricity, Recitations | 2 | E. M. | 34, 35 | — |
| 44 | Dynamo Electric Machinery | 3 | E. | 14, 27 | — |
| 45 | Physical Laboratory | 2 | E. M. C. | 34, 35 | 43 |
| 46 | Thermo-Dynamics | 3 | M. | 30, 36 | 39 |
| 47 | English Literature | 1 | E. M. C. | 38 | — |
| 48 | Masonry Construction | 3 | C. | 39, 41 | 39, 41 |
| 49 | Surveying | 3 | C. | 32 | — |
| | Drawing—Design | 2 | E. M. | 31 | — |

*E.—Electrical. M.—Mechanical. C.—Civil.

## SENIOR YEAR.

| No. of Subject. | SUBJECT. | No. of exercises per week. | By whom taken.* | Must be preceded by | Cannot be taken before |
|---|---|---|---|---|---|
| | FIRST TERM. | | | | |
| 50 | Differential Equations | 2 | E. M. C. | 39 | — |
| 51 | Drawing—Design | 1 | E. M. C. | 31, 41 | — |
| 52 | Applied Mechanics | 3 | E. M. C. | 41, 42 | — |
| 53 | Electricity, Recitations | 4 | E. | 43, 45 | 50 |
| 54 | Electricity, Laboratory | 3 | E. | 43, 44, 45 | 53 |
| 55 | Steam Engineering | 3 | M. | 31, 36, 39, 46 | 52 |
| 56 | Political Economy | 3 | E. M. C. | — | — |
| 57 | Hydraulics | 3 | E. M. C. | — | 52 |
| 58 | Roads and Railroads | 3 | C. | 48 | 60 |
| 60 | Surveying | 2 | C. | 32 | 58 |
| | SECOND TERM. | | | | |
| 61 | Least Squares | 2 | E. M. C. | 30 | — |
| 62 | Drawing—Design | 2 | E. M. C. | 51 | — |
| 63 | Electricity | 3 | E. | 53 | — |
| 64 | Laboratory, Electrical | 4 | E. | 54 | 63 |
| 65 | Laboratory, Mechanical | 4 | M. | — | 68 |
| 66 | Laboratory, Hydraulic | — | M. | 57 | — |
| 67 | Telegraph and Telephone | 2 | E. M. C. | 27 | — |
| 68 | Steam Engineering | 3 | M. | 55 | — |
| 69 | Railroads | 3 | C. | 39, 52, 58 | — |
| 70 | Bridges and Roofs | 3 | C. | 52 | — |
| 71 | Thesis | — | E. M. C. | — | — |

*E.—Electrical. M.—Mechanical. C.—Civil.

# Buildings and Equipment.

## BUILDINGS.

The College buildings are fourteen in number: Ballou Hall, containing recitation rooms and the physical laboratory; Barnum Museum, containing the natural history collections and the biological and geological laboratories and lecture room; Goddard Chapel; Goddard Gymnasium; the Library; the Chemical Building, containing the chemical laboratories and lecture room; three dormitories, — East Hall, West Hall, Dean Hall; the Commons Building, containing the commons dining-hall, the post-office, and rooms for students; and Metcalf Hall, for women students. The Bromfield-Pearson school building is available for the technical courses of the College. Two buildings, Miner Hall and Paige Hall, are devoted to the use of the Divinity School.

## LIBRARY.

The Library contains about thirty-six thousand bound volumes, and over sixteen thousand pamphlets. It includes, in a separate room, the private library (numbering fourteen hundred and forty volumes) of the late Rev. William H. Ryder, D. D., of Chicago. It has a very full collection of English works relating to music, and in addition to its general collection in American history, the valuable collection in this field of the late Richard Frothingham. There is also the Metcalf Musical library of thirteen hundred volumes, which is accessible to students of the College. The College regularly receives over two hundred periodicals. In the Library building a reading-room, maintained by the students, supplies the daily and weekly papers. Provision for the purchase of books is chiefly from the income of the Joy Library Fund, now amounting to twenty thousand dollars. The average annual increase by donation and purchase, for the last five years, has been about twelve hundred volumes. The Library is open to all members of the College every day in the week, except Sunday, from 8.45 A. M. to 12.45 P. M., and from 2 to 5 P. M.

In addition to the general library, there is in Miner Hall the collection of the Universalist Historical Society (thirty-five hundred volumes and several thousand pamphlets), to which, on application, students have free access; and in the Barnum Museum the department library of Natural History, numbering eight hundred and twenty-six volumes and eighteen hundred and seventy-five pamphlets. There are altogether over forty thousand bound volumes available for use.

## BARNUM MUSEUM.

The Barnum Museum of Natural History was built in 1883–84 by the late Phineas T. Barnum, who also gave the College a fund for its maintenance, and later, by bequest, gave funds for the erection of two wings to the central building. One of these wings has been erected. In addition to laboratory rooms, it affords space for the display of the mineralogical and geological collections.

The College is also indebted to Mr. Barnum for the larger portion of its zoölogical collection. This serves to illustrate all groups of the animal kingdom and is especially rich in skeletons and mounted skins of mammals. Besides the more common forms, it contains many rare and interesting species, as Hatteria, Polypterus, Ceratodus, Protopterus, Cestracion, Amphioxus, Peripatus, and Pentacrinus, the whole being well adapted for the purposes of instruction. During recent years a large series of skeletons of the lower vertebrates, as well as numbers of the Naples Station Invertebrates, have been placed on exhibition.

The botanical collection consists of an herbarium containing a representation of the flora of New England, besides many specimens from Europe and the Southern and Western States. The geological collection contains representatives of the various types of rocks, as well as of fossils from all formations. Especially interesting are the nearly perfect skeletons of Ichthyosaurus and Plesiosaurus. The mineralogical collection, which has been assembled with great care, contains most of the species in very fine examples. Among those at present displayed are collections illustrating the chemical and physical properties of minerals.

The laboratories and lecture rooms of the department of Geology are in the main Museum building. The geological laboratory is provided with petrological miscroscopes, instruments for making rock sections, and other instruments; the mineralogical laboratory possesses the apparatus necessary for the determination of minerals, the analysis of ores, and assay work; the biological laboratories are in the newly erected wing. The laboratory for elementary work is equipped with all necessary facilities, while the laboratories (two in number) for advanced and research work have all the necessary appliances and reagents for investigation in the lines of Anatomy, Histology, and Embryology.

The department library of Natural History, recently established in the Barnum Museum, contains those publications which bear directly upon the work of the department. It already embraces over nine hundred and fifty volumes and over twenty-three hundred pamphlets. Its future increase is in part provided for by the publications received in exchange for the "Tufts College Studies." Most of the series of periodicals are complete since 1870.

## GODDARD GYMNASIUM.

The Goddard Gymnasium is the gift of Mrs. Mary T. Goddard, and comprises, besides the main room for individual and class exercise, dressing-rooms, tub-baths, shower-baths, and lockers. The floor space unoccupied by apparatus is sufficient to accommodate a class of sixty men. The apparatus embraces that usually found in a well-equipped gymnasium, including fourteen Sargent developing machines, a large wrestling mat, and facilities for basket ball. A running-track, one thirty-second of a mile in length, extends around the room. A full set of anthropometric instruments admits the accurate measurement of each student as preliminary to the assignment of suitable exercise.

## PHYSICAL LABORATORY.

The Physical Laboratory contains apparatus sufficient for illustrating all the general principles of Physics. The equipment includes a dividing engine, chronograph, cathetometer, sextant, microscope, saccharimeter, polariscope, spectroscope, spectrometer, optical bench, Rowland's gratings, and charts of the solar spectrum; also apparatus for projection with sunlight, lime, and electric lights. In the field of electricity the equipment is especially good, including standards of resistance, of capacity, and of electro-motive force, besides a variety of instruments for accurate measurement.

## ELECTRICAL LABORATORY.

The Electrical Laboratory is supplied with the apparatus needed for testing and experimental purposes; among which may be mentioned ammeters, voltmeters, Wheatstone bridges, reflecting galvanometers, an electrometer, Sir William Thomson's standard balances, condensers, a large induction coil, and, in process of construction, an electro-dynamometer with coils a meter in diameter.

The dynamo-room contains a B. F. Sturtevant high-speed automatic engine of about twenty-five horse power, belted to a line of shafting, the driven pulley being connected to the shafting through an Emerson power-scale reading to forty horse power. From this shafting are belted an American and a Ball arc-light dynamo, a 12 kilo-watt polyphase generator, a 15 kilo-watt 110 volt generator, and a pair of 110 volt 1,500 watt machines for the Library three-wire installation. Connected with the engine by a clutch is a 15 kilo-watt Mordey alternator. There are also a pair of railway motors and several small motors for testing purposes and for power. Steam power is furnished by a Whittier boiler.

Belonging to the dynamo-room are over twenty arc-lamps and a supply of electrical testing instruments. Adjacent is the battery-room, the main battery consisting of sixty of the large cells of the American Accumulator Company. These cells are in constant use for experimental and motor work, and for lighting.

### CHEMICAL BUILDING.

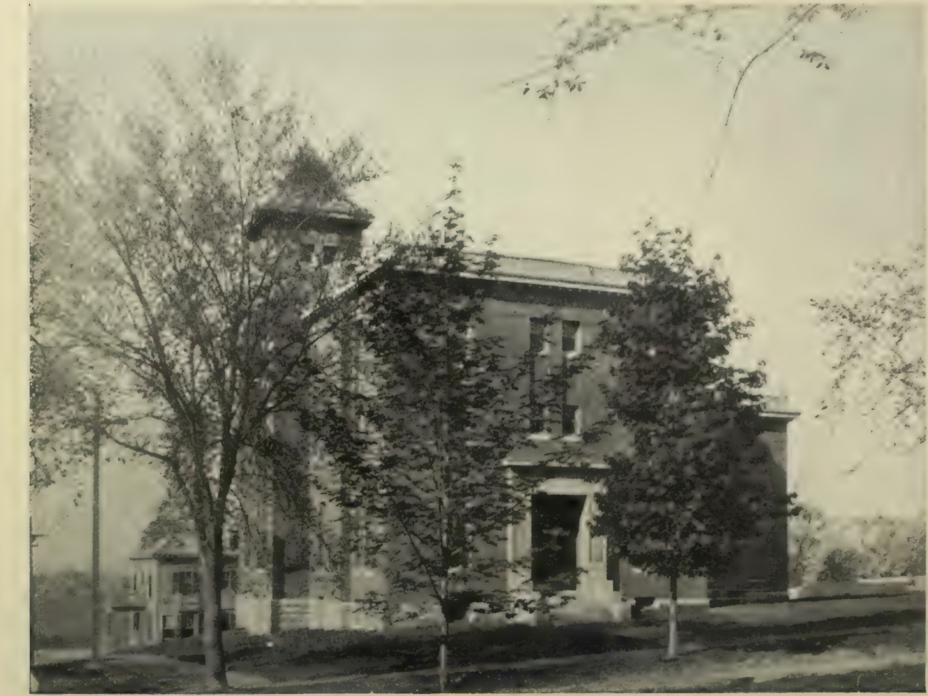
The building of the department of Chemistry contains laboratories for General Inorganic, Organic, Analytical, and Metallurgical Chemistry, a large lecture room, library, and weighing room, and the private laboratories of the professors in charge. The rooms are provided with all the modern laboratory conveniences and are well equipped with apparatus and chemicals.

### BROMFIELD-PEARSON BUILDING.

The Bromfield-Pearson building is provided with shops and drafting-rooms equipped for the instruction of classes in the Engineering courses in Carpentry, Pattern-making, Forging, Foundry and Machine Work, and Drawing. The equipment includes a forge shop and foundry, provided with the necessary forges and tools for a class of eighteen; pattern and machine shops, also equipped for classes of eighteen, each member being provided with a lathe, bench, and necessary tools. The drafting-rooms are on the northern side and are separated from the noise and vibration of the shops. Abundant and uniform light is provided.

### THE HALLS.

The Halls for the accommodation of students in the College of Letters are five in number. East, West, and Dean Halls, and the Commons Building, for men, are arranged with spacious and convenient rooms, in suites, are warmed by steam, lighted by gas, and have good modern plumbing. Metcalf Hall for women students is a gift to the College by Mr. Albert Metcalf, of Newton. It is built of buff brick and gray limestone, of simple and dignified architecture, and is equipped with every convenience. In the basement is a gymnasium, with bath-rooms connected. The first floor contains the rooms



METCALF HALL.

of the matron, a reception-room, cloak-room, reading-room, and dining-room. The second and third floors have pleasant rooms for students, with ample bath and toilet conveniences on each floor. In the wing is the kitchen on the first floor, and servants' rooms on the second. Every safeguard for health and against fire is provided.

# General Information.

### RELIGIOUS OBSERVANCES.

Goddard Chapel, erected in 1882–83, is the gift of Mrs. Mary T. Goddard as a memorial of her husband, the late Thomas A. Goddard. Morning prayers are held daily, at which attendance is required. The care of the pulpit on Sundays devolves upon the President of the College; but variety and interest are given to the preaching services by frequent exchanges with neighboring clergymen. Attendance upon Sunday services is required; but permission is freely given to those who desire to attend elsewhere.

The Russell Lecture, established in accordance with a bequest of the late James Russell, of Arlington, is delivered before the Trustees, Faculty, and students, on the first Sunday of the college year, by either a clergyman or a layman, on a subject prescribed by the testator.

### TUFTS COLLEGE STUDIES.

This publication has been established as a means of presenting to the world the results of original work done in the different departments of the College. The numbers, which will be issued as material is ready, will be distributed to educational institutions and learned societies. The College desires to establish regular exchanges of these Studies with all publishing institutions at home and abroad. Correspondence regarding such exchanges should be addressed to the Librarian of Tufts College.

Three numbers have been issued, containing the following papers: "The Anterior Cranial Nerves of Pipa," by G. A. Arnold; "Ectodermic Origin of the Cartilages of the Head," by Julia B. Platt; "The Classification of the Arthropoda," by J. S. Kingsley; "Development of the Lungs of Spiders," by

O. L. Simmons; "Development of the Wing in Sterna Wilsoni," by V. L. Leighton; "The Morphology and Classification of the Pauropoda, with Notes on the Morphology of the Diplopoda," by Frederick C. Kenyon.

The editorial board of Tufts College Studies for the current year is made up of the President of the College, and Professors Knight, Dolbear, and Kingsley.

## REGISTRATION.

Every student who has been a resident one year or more at the College is required to file a plan of study, properly approved, at the office of the Registrar before noon of the opening day of the college year, two copies being made on blanks furnished for the purpose, one to be kept on file by the Registrar, the other for the use of his major instructor. A registration fee of two dollars will be charged to every student not registering in person on the morning of the opening day. Hours for consultation of students with instructors will be publicly announced. No petitions concerning the courses of students in regular standing, except such as may be made in appeal from the decisions of major instructors, will be brought up for action by the Faculty; but all petitions relating to special courses and all appeals from decisions of major instructors must be before the Faculty at the first meeting of the term. The regulations governing the registration of entering students are stated in General Information Relating to Admission, on page 60. The Committee on Freshman Plans of Study will be in session for consultation from two to five o'clock in the afternoon of the second day of the fall examinations. All classes will meet their instructors on Friday, the second day of the college year, according to a schedule which will be duly posted.

The morning of Saturday, the last day of the first half-year, will be given to registration of plans of study for the second half-year and consultation in regard to the work of the term.

Promotions.— Students in the courses leading to the degrees of A. B. or Ph. B. are registered as Sophomores when they have twenty-six term hours to their credit; as Juniors when credited with fifty-eight term hours; and as Seniors when credited with ninety term hours.

Students in the Engineering Courses fail of promotion if they have deficiencies amounting to six term hours in the prescribed work of the year. The Engineering Committee will be in session from nine to twelve o'clock in the forenoon of the second day of the fall examinations to consider the programs of such students in Engineering as have six or more term hours of conditions, or have failed to fulfil requirements imposed at the close of the previous year.

Admission from Other Colleges.— Students entering Tufts College after pursuing study in any other college of equal rank are credited with the number of hours' work actually done towards the requirements of Tufts College, as certified by the proper authorities of the college from which the student comes. Such students must present satisfactory certificates showing the amount and character of work already accomplished, in order to obtain credit on the course of this College.

## SPECIAL STUDENTS.

Students wishing to pursue a special course of study, who are not candidates for a degree, are subject to the following regulations: —

1. Every special student shall choose a major department, and shall make up a plan of study under the direction and subject to the approval of the major instructor.
2. The student shall satisfy the instructor in each subject included in the approved plan of study that he is able to pursue the work.
3. Every special student having less than fifteen program hours a week will be required to obtain seventy per cent in each subject; but those whose program hours number fifteen or more will be treated in the same manner as regular students.
4. A special student, on leaving college, shall be entitled to a certificate giving the per cent. attained in each course pursued, and signed by the President and Registrar.

5. Special students in Electrical Engineering are required to pass examinations in General Physics, Trigonometry, and Elementary Calculus.

### TERMS AND VACATIONS.

The college year begins on the third Thursday in September, and ends at Commencement, the third Wednesday in June. The year is divided into two terms of eighteen weeks each. There are no college exercises during a recess of three days at Thanksgiving, two weeks at Christmas, and one week beginning on the Saturday before the first Thursday in April.

### EXPENSES.

The charge for instruction is *one hundred dollars* a year, except in the Engineering Courses, the tuition for which is *one hundred and twenty dollars* a year.

Students in the chemical laboratories are charged for breakage, and *four dollars* a term for materials used. A fee of *two dollars* a term, payable in advance, is required of all students taking laboratory work in Biology. Students other than engineering who take shop work are charged extra.

The college halls will accommodate two hundred and fifty men. Half-room rent, including heat, ranges from sixteen to eighty-five dollars. Metcalf Hall will accommodate twenty-four women. Students furnish their own rooms. A charge of *ten dollars* a year for the care of rooms is made to all persons rooming in any of the College buildings, except Paige Hall. Any damage done by students to college property is charged in the term bills.

Rooms in the college halls will be open for the occupancy of students on and after the Wednesday of the week preceding the opening of the college year.

Students not having a college residence will be charged *ten dollars* a year for rooms occupied between recitation hours.

Every student who enters the College of Letters is required to deposit with the Treasurer of the College either a bond with two satisfactory sureties for the sum of *two hundred dollars*, or the sum of *one hundred dollars* in cash, which sum, with interest at the rate of four per cent yearly will be returned when the student leaves the College, his term bills first being paid in full. No officer or student of the College will be accepted as a bondsman.

The charges for each year are contained in two bills, of which the first is made at the middle of the year, and is payable on the first day of March; the second is made immediately after Commencement, and is payable on the first day of the following college year; but the second bill of the Senior year must be settled by the Saturday before Commencement, or graduation will not be permitted.

All college charges are payable to the Treasurer, and all arrangements with regard to rooms are to be made with him. The Treasurer's office is in the Library Building.

Students board in commons at $3.75 per week; in private families at $3.50 to $5.00 for table board. Other expenses vary with the economy of each student.

The following estimates represent the fixed annual expenses: —

| | | |
|---|---|---|
| Tuition | $100.00 | $100.00 |
| Physical culture, including gymnasium and grounds | 10.00 | 10.00 |
| Reading-room | 1.00 | 1.00 |
| Half-room rent | 16.00 | 85.00 |
| Care of rooms | 10.00 | 10.00 |
| Board, $3.50 to $5.00 a week (36 weeks) | 126.00 | 180.00 |
| Total | $263.00 | $386.00 |

## SCHOLARSHIPS.

Awards of scholarships are made by the Board of Trustees on the recommendation of the Faculty. The obtaining of a scholarship for one year does not constitute any title to a second nomination.

Applications for scholarships must be filed with the Bursar, on blanks furnished for the purpose, on or before the tenth day of October; and, if the applicant be a minor, must be sanctioned by his parent or guardian. Scholarships will be granted, in general, only to students actually in need of such aid. No one need apply who has not made satisfactory progress, or who has come under any grave censure in the course of the year.

*Scholarships are available for those students only whose term bills are fully paid within ten days after the opening of each college term or after such bills shall have become due. The bills of any student whose connection with the College ceases are due at that time. The term bills of members of the graduating class are payable on the Saturday preceding Commencement Day.*

No scholarship is available to any student who is not a resident of a college dormitory, unless excused in writing from such residence by the authority of the executive committee of the Board of Trustees.

The following scholarships, the yearly income of which is one hundred dollars each, are awarded annually by the Trustees, but except in special cases, when the donor has otherwise stipulated, the Trustees will award scholarships in the sum of fifty dollars each.

THREE STATE SCHOLARSHIPS,— Established in accordance with a resolve of the Commonwealth.

FIVE HOWLAND SCHOLARSHIPS,— Established from the income of the bequest of the late Edwin Howland, of South Africa.

FIVE WALKER MATHEMATICAL SCHOLARSHIPS,— Established in honor of the late William J. Walker, M. D., of Newport, R. I., and payable from the income of the Walker Fund.

TWO MOSES DAY SCHOLARSHIPS,— Founded by the late Moses Day, of Roxbury.

THE A. A. MINER SCHOLARSHIP,— Founded by the late A. A. Miner, D. D., of Boston.

THE REBECCA T. ROBINSON SCHOLARSHIP,— Founded by the late Charles Robinson, LL. D., of Newton.

THE WILLIAM OSCAR CORNELL SCHOLARSHIP,— Founded by William Oscar Cornell, of Providence, R. I.

THE ARA CUSHMAN SCHOLARSHIP,— Founded by Ara Cushman, of Auburn, Me.

THE LAURA A. SCOTT SCHOLARSHIP,— Founded by Mrs. Laura A. Scott, of Ridgefield, Conn.

The Stow Scholarship,— Founded by Mrs. Eugenia D. Stow, of Meriden, Conn.

The Norcross Scholarship,— Founded by James A. and Mrs. Mary E. Norcross, of Worcester.

The Anderson Scholarship,— Founded by John M. Anderson, of Salem, in the name of John M. and Rebecca Anderson.

The Travelli Scholarship,— Founded by Mrs. Emily R. Travelli, of Newton.

The Whittier Scholarship,— Founded by Charles Whittier, of Roxbury, in the name of Charles and Eliza Isabel Whittier.

The Talbot Scholarship,— Founded by Newton Talbot, of Boston.

The Simons Memorial Scholarship,— Founded by Mrs. Mary A. Simons, of Manchester, N. H., in memory of Hiram H. Augustus, and Frank Simons.

The Amasa and Hannah L. Whiting Scholarship,— Founded by Mrs. Hannah L. Whiting, of Hingham.

The Martha Goldthwaite Memorial Scholarship,— Founded by Willard Goldthwaite, of Salem.

The Andrew J. Clark Memorial Scholarship,— Founded by Mrs. Abbie B. Clark, of Orange.

The Sarah E. Sayles Memorial Scholarship,— Founded by Albert W. Sayles, of Lowell.

The Cousens Scholarship,— Founded by John E. Cousens, of Brookline, in the name of John E. and Sarah C. Cousens.

The Benjamin F. Spinney Scholarship,— Founded by Benjamin F. Spinney, of Lynn.

The Henry F. Barrows Scholarship,— Founded by Henry F. Barrows, of North Attleboro.

The Ellery E. Peck Memorial Scholarship,— Founded by Henry Rollins, of Bangor, Me. The income of this scholarship is not at present available.

The J. H. Morley Memorial Scholarship,— Founded by Herbert Morley Small, of Baldwinville.

The Edwin H. Chapin Memorial Scholarship,— Founded by friends of the late E. H. Chapin, D. D., in New York City.

The Thomas A. Goddard Memorial Scholarship,— Founded by Mrs. Mary T. Goddard, of Newton.

The Hosea Ballou, 2d, Memorial Scholarship,— Founded by Mrs. Mary T. Goddard, of Newton.

The Henry E. Cobb Scholarship,— Founded by the late Henry E. Cobb, of Boston.

The Mary Ann Ward Scholarship,— Founded by Sylvester L. Ward, of Boston.

THE MARIA P. WINN SCHOLARSHIP,— Established from a bequest of the late Mrs. Maria P. Winn, of Woburn.

THE JOSEPH D. PEIRCE MEMORIAL SCHOLARSHIP,— Founded by the children and other relatives of the late J. D. Peirce, D. D., of Attleboro.

THE SCHOLARSHIP OF THE CLASS OF 1857,— Founded by the late Heman Allen Dearborn, for the benefit of women students. This scholarship is not available the present year.

TWO JOHN AND LUCY H. STOWE SCHOLARSHIPS,— Two scholarships of one hundred dollars each for women students, founded by Mrs. Lucy H. Stowe, of Lawrence, Mass.

TWO SIMMONS SCHOLARSHIPS,— Founded by the will of Robert F. Simmons, of Attleboro, in the names of Mary F. and Robert F. Simmons.

THE JOSHUA S. AND HARRIET N. WHITE SCHOLARSHIP,— Founded by the late Joshua S. White, of Pawtucket, R. I.

THE JOHN B. PERKINS SCHOLARSHIP,— Founded by Ann Maria Perkins, of Medford, Mass.

The following scholarships of fifty dollars each are awarded annually: —

THE A. A. MINER SCHOLARSHIP,— Founded by A. A. Miner, D. D., of Boston.

THE PERKINS SCHOLARSHIP,— Founded by James D. Perkins, of Brooklyn, N. Y.

THE MOSES DAY SCHOLARSHIP,— Founded by the late Moses Day, of Roxbury.

THE JOHN AND LUCY H. STOWE SCHOLARSHIP,— Founded by Mrs. Lucy H. Stowe, of Lawrence, for the benefit of women students.

THE BARNARD SCHOLARSHIP, — Founded by Caroline M. Barnard, of Everett.

THE BARTLETT SCHOLARSHIP, — Founded by Mrs. Nancy Bartlett, of Milford.

THE B. H. DAVIS SCHOLARSHIP, — Founded by the Rev. B. H. Davis, of Weymouth, for the benefit of students of the College of Letters who are preparing to enter the Christian ministry.

The following scholarships are awarded under special conditions: —

THE GREENWOOD PRIZE SCHOLARSHIP IN ORATORY,— Founded by the late Mrs. Eliza M. Greenwood, of Malden, and given to such student as shall have made, as the result of faithful work, together with a fair degree of attainment, the greatest improvement in Oratory.

THE WENDELL PHILLIPS MEMORIAL SCHOLARSHIP,—Founded to perpetuate the name, fame, and influence of Wendell Phillips. This scholarship is to be awarded to a student who has completed the Freshman and Sophomore years of his course, and he is to have the benefit of it during the remainder of his course. The beneficiary must be of sound body, high character, and ability in declamation and debate, and must comply with certain special conditions, including participation in a competitive debate of the applicants at the end of the Sophomore year. The specific conditions governing the award of this scholarship may be obtained by those intending to apply therefor of the Secretary of the Faculty, to whom application should be made early in the Sophomore year. The income of this scholarship is at present seventy dollars.

LOAN FUND FOR WOMEN.— The Woman's Universalist Missionary Society of Massachusetts maintains a fund which is loaned to deserving women students, in sums of one hundred dollars, at four per cent. This fund now amounts to about three thousand dollars.

APPOINTMENTS.— The pay of a monitor is *fifteen dollars* a year; that of the bell-ringer and the organist, *one hundred and fifty dollars* each.

## PRIZES.

GODDARD PRIZES.— In the second term of the academical year three prizes of *fifteen dollars* each are assigned from the Goddard Prize Fund, as follows: —

A prize for the best examination in Plato's Symposium, or the Agamemnon of Æschylus, including an account of the author and his works.

A prize for the best Latin prose translation, by a member of the class pursuing Latin 6, of the fifth, sixth, and seventh sections of Chapter LV in Liddell's History of Rome.

A prize for the best examination in the Mathematics of the first year.

The translations must be left at the President's office by the first day of May, in sealed envelopes, accompanied by sealed letters containing the authors' names.

Rhetorical Prizes.— Six prizes are awarded, as follows: —

Two prizes, of *twenty* and *ten dollars* respectively, to the best readers among students who have taken six term hours in Oratory.

Two prizes, of *twenty* and *ten dollars* respectively, to students who have taken four term hours in Oratory, for the best exhibition of improvement and skill in elocution.

Two prizes, of *twenty* and *ten dollars* respectively, on the same conditions, to students who have taken two term hours in Oratory.

The rhetorical prizes are awarded by a committee, chosen by the Faculty, who judge the work presented by the competitors upon the public day appointed for that purpose. In order to enter the public competition, candidates, as well as their selections, must be approved by the Professor of Oratory.

Entrance Examination Prizes.— Two prizes, of *thirty* and *twenty dollars* respectively, are awarded for the best entrance examinations. No one will be considered a candidate for such prize unless he has passed at the regular examinations in all the subjects required for admission to the College, and has been admitted without conditions. These prizes are payable at the end of the first term in College.

The foregoing prizes are not awarded unless, in the opinion of the respective judges, there is sufficient merit in the several contests to warrant their distribution.

## HONORS AND DEGREES.

Final Honors will be conferred at Commencement upon any member of the graduating class in the Courses in Liberal Arts who shall have attained Grade A (at least eighty-seven per cent.) in a major department, and Grade B (at least seventy-five per cent.) in the collateral subjects.

Final Honors will be conferred at Commencement upon any member of the graduating class in the Engineering Courses who shall have complied with the following conditions: —

In the two years immediately preceding graduation,—

1. He must have attained Grade A (over eighty-seven per cent.)

in the equivalent of six hours a week for a year in the subject in which he desires honors.

2. He must also have attained Grade A in extra work in this or a cognate subject equivalent to three hours a week for a year.

3. He must have attained Grade B (over seventy-five per cent) in the average of all his studies during this period.

The following subject in the Engineering Courses is open for honors,— Electricity.

HONORABLE MENTION will be made in the Commencement program and in the Annual Catalogue of a student who has attained an average Grade A or B in a department to which, during the two years preceding, he has given the equivalent of not less than six hours a week for a year.

THE DEGREE OF BACHELOR OF ARTS will be conferred at Commencement by the Trustees, on recommendation of the Faculty, upon students who shall have complied in a satisfactory manner with the conditions stated on pages 63 to 66.

THE DEGREE OF BACHELOR OF PHILOSOPHY will be conferred upon students who shall have complied with the conditions stated on pages 63 to 66, for the attainment of that degree.

THE DEGREE OF BACHELOR OF SCIENCE will be conferred upon students who shall have completed the General Course in Science, the Special Course, in Biology or in Chemistry, or the Medical Preparatory Course, complying in a satisfactory manner with the conditions stated on pages 103 to 106.

THE DEGREE OF BACHELOR OF SCIENCE in Civil Engineering, in Electrical Engineering, or in Mechanical Engineering, will be conferred upon students who shall have completed the required course, under the same conditions.

Students of the courses in Liberal Arts may so arrange their elective work as to make it possible to obtain the degree of Bachelor of Science in Civil Engineering, Electrical Engineering, or in Mechanical Engineering, after a graduate course of one year in the Engineering Department.

For the advanced degrees of MASTER OF ARTS, DOCTOR OF PHILOSOPHY, CIVIL ENGINEER, ELECTRICAL ENGINEER, and MECHANICAL ENGINEER, see Graduate Department, page 141.

# The Graduate Department.

## EXECUTIVE BOARD OF THE GRADUATE DEPARTMENT.

ELMER H. CAPEN, D. D., *President.*
HEMAN A. DEARBORN, A. M.
WILLIAM G. TOUSEY, A. M., B. D.
AMOS E. DOLBEAR, M. E., PH. D.
GEORGE T. KNIGHT, A. M., D. D., *Secretary.*
J. STERLING KINGSLEY, S. D.

## INSTRUCTION.

Graduate instruction is given by the General Faculty. The advanced elective work offered to undergraduates in any department of the College of Letters is open to graduate students, and will count for the degree of Master of Arts, on condition that it be not counted for any other degree. Additional courses still more advanced may be arranged in many cases with the instructor in whose department the work is to be done.

## DEGREES.

The degrees offered are Master of Arts, Electrical Engineer, Mechanical Engineer, Civil Engineer, and Doctor of Philosophy. Departments at present open to candidates for the degree of Master of Arts are: —

ENGLISH LITERATURE.
MODERN LANGUAGES.
LATIN.
GREEK.
HISTORY.
MATHEMATICS.
CHEMISTRY.
BIOLOGY.
ELECTRICITY.

The degree of Doctor of Philosophy is offered in CHEMISTRY and BIOLOGY.

The conditions upon which the several degrees may be obtained and the requirements of the departments are stated below.

THE DEGREE OF MASTER OF ARTS will be conferred upon graduates of Tufts College who have received the degree of Bachelor of Arts or upon graduates of other colleges whose course of study has been equivalent to that required at Tufts College for the degree of Bachelor of Arts, upon the following conditions : —

1. They shall have completed an approved course of advanced study, including the equivalent of at least thirty term hours, in one or, at the most, two departments.
2. This course shall be pursued during a residence of not less than one year. The condition of residence may be waived by special permission, but in this case the degree cannot be taken with less than two years of graduate study.
3. The candidate shall prepare a thesis and pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.
4. No subject counted for the first degree will be counted for the second degree.
5. Candidates for this degree must make a written application to the Executive Board of the Graduate Department before October 1 of the college year in which the degree is to be conferred, and if the degree is not taken after one year's study they must also give a second notice three months before receiving the degree.

Graduates of Tufts College who have taken the degree of Bachelor of Philosophy, or graduates of other colleges holding a degree of similar grade, must complete the requirements for the degree of Bachelor of Arts before they can be entered as students in courses leading to the degree of Master of Arts.

THE DEGREE OF CIVIL ENGINEER, ELECTRICAL ENGINEER, or MECHANICAL ENGINEER will be conferred upon Bachelors of Science in Civil, Electrical, or Mechanical Engineering, respectively, who shall satisfactorily pursue advanced professional study at the College for one year, under the conditions required of candidates for the degree of Master of Arts ; or who shall present suitable evidence of three years of professional work, of which one must be in a position of responsibility, in which case a certain amount of professional study will be assumed, upon which a thesis shall be presented.

THE DEGREE OF DOCTOR OF PHILOSOPHY will be conferred upon Bachelors of Arts, Philosophy, or Science, who shall have pursued at least three years of graduate study, two years of which must be in residence. This degree will not be conferred simply on the ground of the completion of the required course of study. High attainment is necessary, and especially the power of original thought and independent investigation. The whole course of study must be devoted to one subject, and a thesis must be presented giving evidence of original research. Other special requirements may be made by the instructors in charge of the work of the candidates. Each candidate must pass a satisfactory examination before a board of three examiners appointed by the Executive Board of the Graduate Department.

The candidate for this degree must make a written application to the Secretary of the Executive Board of the Graduate Department at least two years before the degree is to be conferred, and his thesis must be handed to the Secretary of the above board at least two months before Commencement.

THE DEGREE OF MASTER OF ARTS may be taken by candidates for the degree of Doctor of Philosophy at the end of their first year's study, or will be conferred together with the latter degree.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF MASTER OF ARTS.*

**English Literature.**— Candidates for the degree of Master of Arts must have taken subjects 1 and 2, with at least six term hours of work in one or more of the subjects numbered from 3 to 7. Six term hours must also have been given to one or more of the subjects numbered from 8 to 15. If not previously taken, the subjects numbered 13 and 14 may be pursued as a part of the graduate work, but the student will be expected to surpass, both in quantity and quality, the work required of undergraduates. In addition to catalogue subjects, the graduate student will be expected to present, in the required thesis, the results of some extended investigation in literary history or criticism.

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* Subject numbers referred to in these statements are those used under Departments of Instruction, pages 67 to 102.

**Modern Languages.**— The extended undergraduate courses offered in Modern Languages enable the candidate for the degree of Bachelor of Arts, who specializes in this department, to cover the work formerly required for the Master's degree. For those who have not taken the more advanced subjects, the department offers a full graduate course leading to the degree of Master of Arts. The work is performed in existing undergraduate classes. (See pages 72 to 76.) To enter upon this course, the candidate must have completed the equivalent of six of the Modern Language subjects, including 1 and 2 in both German and French. Of elementary subjects only Italian may be taken by such as have had the equivalent of two years of French. Graduate students whose special work is being performed in other departments are admitted to such classes in German and French, beyond subject 1, as their proficiency will allow.

**Latin.**—Candidates for the degree of Master of Arts in Latin must have completed satisfactorily Latin 1, 2, 3, or 4, and 5, or equivalents. Greek may be taken as minor work with Latin. A reading knowledge of German is essential, and of French and Italian desirable, for students intending to take advanced work in Latin. Graduate students, when pursuing subjects especially designed for undergraduates, are expected to do an extra amount of work in them. The required thesis must embody the result of the special investigation of some author or period, or of some philological or archæological subject.

**Greek.**— Candidates for the degree of Master of Arts in Greek must have completed Greek 1, 2, 3, or 4, and 5 or 6, or equivalents for these subjects. Latin may be taken as minor work with Greek. Graduate students will be expected to do work of advanced character, whether in classes with undergraduates, or on special lines of investigation assigned by the instructor. The required thesis, on some approved topic, relating to some author, period, or philological problem, must give evidence of this advanced attainment.

**History.**— Every graduate student who intends to become a candidate for a degree must have taken History 1 and 4, or their equivalents. Candidates for the degree of Master of Arts must be able to read French works, and a working knowledge of German is desirable, and may in some cases be necessary. Of the subjects announced in the program of this department on pages 68 to 71, 2, 3, 5, 6, and 7 will be accepted as part of work leading to the degree of Master of Arts. In addition to these subjects work will be laid out for graduate students in such special lines as individuals may desire to pursue. Certain collateral subjects may be called for in such cases. Graduate students will be expected to do something in the way of independent investigation of a definite subject, the results to be embodied in the thesis required to obtain the degree.

**Mathematics.**— Graduate students in Mathematics must have passed creditably the prescribed undergraduate work in this department — Mathematics 1 — and may do graduate work from that point or from such more advanced point as they may have attained. They are required to complete all the courses offered by the department, except Mathematics 11, as stated in the Catalogue, to receive the degree of Master of Arts.

**Chemistry.**— Candidates for the degree of Master of Arts must have completed subjects 1, 2, 3, and 10, or their equivalents. Subjects 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, and 15 are offered for graduate students, and satisfactory work must be done in at least five of these subjects. The candidate must present an acceptable thesis and pass satisfactory examinations in all of the subjects studied.

**Biology.**— Candidates for the degree of Master of Arts in Biology must have already done work equivalent to Biology 2, 3, and 4 ; or lacking that, they must take omitted subjects in addition to their graduate work. The work will be done in the lines of comparative anatomy, histology, or embryology, and will include a thesis embodying original research.

**Electricity.**— The candidate for the Master's degree in Electricity must have done substantially the work in that department required of the Bachelor of Electrical Engineering. This involves the election during his undergraduate course of studies in this department, if it is expected that the degree will be obtained within one year of graduate study.

## DEPARTMENTS OPEN TO CANDIDATES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

**Chemistry.**— Candidates must be able to translate scientific German readily and accurately before beginning their work, and must have already taken subjects 1 to 7 inclusive, 9 and 10, or equivalent work. Unless previously qualified, they must take subjects 11, 12, 13, 14, 15, and 17, and devote at least one year to subject 16. Examinations in the above subjects must be satisfactorily passed, and a thesis embodying an original investigation in Chemistry must be presented.

A well-equipped laboratory is open to graduate students who may wish to pursue special lines of research, and the department is prepared to offer every facility for the encouragement of original investigations.

**Biology.**— Candidates must have a good working knowledge of French and German before beginning their work, they must carry on research in Animal Morphology for at least three years, two of which must be in residence, and they must have passed one summer at some seashore biological station.

They must pass an examination on general zoölogy, embracing not only the fundamental facts of morphology and classification, but the more prominent philosophical views as well. Each candidate must present an acceptable thesis embodying original research, with an adequate discussion of the bearings of the facts discovered, and the views of previous writers on the same subject.

## FELLOWSHIPS.

THE OLMSTEAD AND MINER FELLOWSHIPS IN NATURAL HISTORY.— In accordance with the spirit of the gift of the late Charles Hyde Olmstead, of Hartford, Conn., the Trustees have established two fellowships in Natural History, to be known respectively as the Olmstead and the Miner Fellowships. The income of these fellowships, amounting to two hundred and fifty dollars annually each, is awarded by the Trustees to graduate students in Natural History upon recommendation of the graduate Faculty. The conditions of the fellowships are as follows: —

(1) The application must be made in writing before May 1, addressed to the President of the College. It must contain evidence of a liberal education, of an ability to profit by the work to be done, and testimonials of good character from instructors or others. Any original article, either written or printed, is an aid in ascertaining the attainments of the candidate.

(2) The holder of the fellowship will be expected to devote himself to the prosecution of some special subject under the direction of the professors in charge of the departments of Natural History. He may be called upon for minor services, such as conducting examinations, but he shall not be called upon to teach. He may, however, at his own option, and with the approval of the President, give instruction by lectures or otherwise to persons connected with the College, but not elsewhere.

(3) The payments will be made, half in January, and half in June; but, in case of resignation or removal from the fellowship, payment will be made only for the time it is actually held. The holder of the fellowship is not exempt from the payment of tuition.

(4) Residence is a condition of holding either of these fellowships.

The holder of a fellowship may be eligible to a single re-election, but incumbency constitutes no claim to reappointment.

## TUITION.

The tuition fee for the whole course for the degrees of Master of Arts, Civil Engineer, and Electrical Engineer is *one hundred dollars*, of which *fifty dollars* is payable in advance.

The tuition fee for candidates for the degree of Doctor of Philosophy is *one hundred dollars* for each year spent at the College, of which *fifty dollars* is payable in advance each year.

The requirement of bonds stated on page 133 applies to all students of the College, graduate as well as undergraduate.

# THE DIVINITY SCHOOL

# Faculty of the Divinity School.

ELMER H. CAPEN, D.D., PRESIDENT.
*In charge of Political Economy.*

CHARLES H. LEONARD, D.D., DEAN.
*Goddard Professor of Homiletics and Pastoral Theology.*

THOMAS J. SAWYER, D.D., LL. D.,
*Packard Professor of Christian Theology, Emeritus.*

WILLIAM G. TOUSEY, A.M., B.D.
*Professor of Ethics and Philosophy of Theism.*

GEORGE T. KNIGHT, D.D., SECRETARY.
*Professor of Church History, also in charge of Systematic Theology.*

GEORGE M. HARMON, A.M., B.D.
*Professor of Biblical Theology.*

DAVID L. MAULSBY, A.M.
*Professor of Oratory.*

WARREN S. WOODBRIDGE, A.M., B.D.
*Woodbridge Professor of Applied Christianity.*

## NON-RESIDENT LECTURERS.

HENRY I. CUSHMAN, D.D.
*Lecturer on Methods of Biblical Study.*

FREDERIC W. HAMILTON, A.M.
*Lecturer on Christian Economics.*

CHARLES R. TENNEY, B.D.
*Lecturer on Character and the Ministry.*

HENRY BLANCHARD, D. D.
*Lecturer on the Old Testament.*

*For students of the Divinity School, see the Register, pages* 30 *and* 31.

*For the Calendar, see pages* 4 *and* 5.

# The Divinity School.

The Divinity School is one of the departments of Tufts College, the general advantages of which are enjoyed by all its members in common. The College Library, the Museum of Natural History, the Gymnasium, are open to all. Courses of study and lectures in the College of Letters are open to the Divinity Students, subject, however, to the discretion of the Faculty. The graduates of the Divinity School in common with the graduates of the other departments are enrolled in the Quinquennial Catalogue of the College, and are eligible to membership in the Alumni Association of Tufts College.

## REQUIREMENTS FOR ADMISSION.

Candidates unknown to the Faculty must bring satisfactory testimonials of good character. They must believe in the Christian religion, and have a sincere purpose to devote their lives to the Christian ministry. It is expected that they will present themselves on the day preceding the first day of the academic year.

Bachelors of Arts are admitted to a three-years course, without examination, to be candidates for the degree of Bachelor of Divinity. Candidates for this degree who are not Bachelors of Arts are required to take a four-years course, and to well sustain an examination on average passages from the Latin of Cæsar, Cicero, and Virgil; and on average passages from the Greek of Xenophon, Homer, and the Gospels. Ability to read simple prose in French or German, and to write in French or German a paragraph upon an assigned subject, is accepted as an alternative for the requirement in Latin.

They are also required to pass a satisfactory examination in Greek, Roman, English, and American History; in Rhetoric; in English Literature and in English Grammar and Composition, in which the requirement is as follows: —

English Grammar and Composition.— Spelling, punctuation, structure of sentences, correct use of words, clearness of expression.

The examination will consist (1) in criticising specimens of incorrect English; (2) in writing a short composition on a subject assigned. Subjects for composition will be drawn from the following standard works in English literature. All the books named for the given year are to be read, and, from two or three of them, subjects will be assigned at the time of examination.

For 1898.— Shakespeare's Macbeth; Milton's Paradise Lost, Books I and II; Pope's Iliad, Books I and XXII; The Sir Roger de Coverley Papers in *The Spectator;* Goldsmith's The Vicar of Wakefield; Burke's Speech on Conciliation with America; De Quincey's The Flight of a Tartar Tribe; Coleridge's The Ancient Mariner; Southey's Life of Nelson; Carlyle's Essay on Burns; Lowell's Vision of Sir Launfal; Hawthorne's The House of the Seven Gables; Tennyson's The Princess.

For 1899.— Dryden's Palamon and Arcite; Pope's Iliad, Books I, VI, XXII, and XXIV; The Sir Roger de Coverley Papers in *The Spectator ;* Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; De Quincey's The Flight of a Tartar Tribe; Cooper's The Last of the Mohicans; Lowell's The Vision of Sir Launfal; Hawthorne's The House of the Seven Gables; Shakespeare's Macbeth; Milton's Paradise Lost, Books I and II; Burke's Speech on Conciliation with America; Carlyle's Essay on Burns.

Those whose age or circumstances forbid so extensive preparation are admitted to the privileges of the school, to take such studies in the regular classes as are suited to their attainments and needs. It is recognized that earnest and capable men aspire to the Christian ministry, who are not able to make the formal preparation required of those who enter to be candidates for the degree.

Applicants from other theological institutions whose course of study is the equivalent of that pursued in this institution, will be received *ad eundem.*

# Course of Study.

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## SUB-JUNIOR CLASS.

**Logic.** — The First Principles of Logic; Concepts and Propositions; Immediate Inference; Deduction; Induction; Analogy; Hypothesis. *Four hours a week (first half-year).*

PROFESSOR TOUSEY.

**Psychology.** — Elementary; The Relations between Mind and Body; The Principles of Modern Psychology; James's Smaller Psychology as a text-book; Lectures; Experiments. *Three hours a week (second half-year).* DR. CUSHMAN.

**English.** — One or more courses to be selected, under direction, from those offered in the College of Letters [see pages 67–72]. *Three hours a week.*

**Old Testament.** — General Introduction. *Three hours a week.*

PROFESSOR WOODBRIDGE.

**New Testament.** — Historical Introduction; Days before Christ. *Two hours a week.* PROFESSOR HARMON.

**Oratory.** — Class Exercises in Vocalization and Gesture. The Principles of Oratory exemplified in practice. *One hour a week.*

PROFESSOR MAULSBY.

**A Science or Language Study.**— (To be selected under direction of the Faculty.) *Three hours a week.*

## JUNIOR CLASS.

**Logic.** — Fallacies; Analysis of Arguments; Ethics of Belief. *Two hours a week (first half-year).* PROFESSOR TOUSEY.

**Old Testament.** — Special studies in Old Testament Literature. *Three hours a week.* PROFESSOR WOODBRIDGE.

**New Testament.** — Criticism of the Synoptic Gospels, Textual and Historical; Hermeneutics; Life and Teachings of Jesus from the Greek of the Synoptic Gospels, with studies from the life of his times. *Four hours a week.* PROFESSOR HARMON.

**Church History.** — History of the Church, of the Sects, and of Doctrines, from the Apostles to the Present Time; History of Doubt. *Four hours a week.*

PROFESSOR WOODBRIDGE and PROFESSOR KNIGHT.

**Homiletics.** — History of Preaching; The Idea and Structure of the Sermon; Homiletic Analysis. *Three hours a week (second half-year).* PROFESSOR LEONARD.

**Oratory.** — Practice in the reading of Scripture, Hymns, and in formal and extemporaneous preaching. *One hour a week.* PROFESSOR MAULSBY.

## MIDDLE CLASS.

**New Testament.** — Criticism of Acts and the Epistles; History and Doctrines of the Apostolic Church, from the Greek of Acts and the Epistles, with studies from the life of the times. *Four hours a week.* PROFESSOR HARMON.

**Ethics.** — The Moral Nature; Ethical Theory; Practical Ethics; Ethics and Theism. *Three hours a week.* PROFESSOR TOUSEY.

**Systematic Theology.** — Theology; Anthropology; Soteriology; Eschatology; Critical Study of Modern Doctrines. *Four hours a week (first half-year) ; three hours a week (second half-year).* PROFESSOR KNIGHT.

**Homiletics.** — Study of Sermons of Eminent Preachers; Lectures; Sermon Writing and Preaching. *Three hours a week.* PROFESSOR LEONARD.

**Applied Christianity.** — The Relations of the Church to the Life of the Individual and to Social Problems. *Two hours a week.* PROFESSOR WOODBRIDGE.

## SENIOR CLASS.

**New Testament.** — Criticism, Exegesis, and Doctrines of the Fourth Gospel. *Two hours a week.* PROFESSOR HARMON.

**Comparative Theology.** — The Religions of Ancient Egypt and Chaldæa; Hinduism; Buddhism; Confucianism; Taouism; Parseeism; Mohammedanism. *Three hours a week (first half-year).* PROFESSOR KNIGHT.

**Philosophy of Theism.** — The Final Problem; Limits of the Intelligence; Theistic Arguments; Final Cause in Nature; Anti-Theistic Theories. *Three hours a week.* PROFESSOR TOUSEY.

**Political Economy.**— Lectures on the History of Finance; Methods and Functions of Banking; Taxation, including Principles of Civil Government. Text-book work, Lectures, and Independent Investigations dealing with the History of Economics, Theories of Production, Consumption, Distribution, etc.; Problems of Profits, Wages, and Labor. *Three hours a week (first half-year).* PRESIDENT CAPEN.

**Homiletics.** — Homiletic Analysis; Lectures on Preaching; Composition and Delivery of Sermons. *Three hours a week.*

PROFESSOR LEONARD.

**Applied Christianity.** — The Pastor's Personal Qualifications and Duties; Organized Work in the Parish; The Conduct of Public Worship; The Mode of Conducting the Special Services of the Church; Actual Work in Missions and Charities. *Four hours a week (second half-year).*

PROFESSOR WOODBRIDGE and PROFESSOR LEONARD.

# Departments of Instruction.

**Psychology.** — The course in psychology is elementary and includes three hours a week for a half-year. The first topic is the Physiological Structure of the Brain, and the Physiology of Special Senses. Then the psychological phenomena are studied. The method of the course is strictly to review, in a scientific way, the fundamental principles of modern psychology. The aim includes not only scientific instruction and practical self-culture, but also has reference to professional uses.

**Logic.** — The Sub-Juniors receive instruction in the usual topics of an academic course. Considerable time is given to logical analysis and the employment of the inductive method as respects both discovery and proof.

The Juniors are exercised more especially in the application of logical principles. A review of the fallacious tendencies of the mind is followed by an extended study of Fallacies, as exemplified in the practical reasoning of men. The course concludes with a brief study in the Ethics of Belief. Under this head the nature and conditions of belief are discussed, the general principles of evidence reviewed, and certain current misconceptions exposed ; the aim being to enforce the duty of rationalizing our beliefs, and while pointing out the limitations of the reason, to develop confidence in its actual findings, and a proper fortitude of conviction.

**English.** — The efficiency of the clergyman is so largely conditioned by literary ability that much emphasis is placed upon the study of English. Opportunity is given to the student to elect in the College of Letters, in the direction both of composition and English literature. Well-directed practice in English composition affords direct aid in the formation of literary style, while the influence of the study of the masterpieces of literature, though indirect, is no less powerful in developing a feeling for appropriate expression. Moreover, the great poets and prose writers abound in suggestion for the public speaker both in their thought and its expression. In consequence, divinity students are expected to take such of the offered subjects as are adapted to their individual needs and available time. Some are advised to continue this work even throughout their whole theological course.

**Old Testament.**—This study has in view such acquaintance with the literature of the Old Testament as, under the guidance of approved texts, an intelligent reading of some of the historic and poetic books will give. For the present, in the absence of a special instructor in this department, work in the Old Testament is confided to Professor Woodbridge. Other teachers in the School, however, will deal with phases of this study according as the subject is related to their special work.

**New Testament.**—In the Sub-Junior Year, the history of the Jewish people from the Conquest of Alexander till the opening of Jesus's ministry is pursued to acquaint the class with the events involved, with the growth of the institutions, the rise of parties, the origin and character of the literature, and the changes in the social and religious sentiment of the Jewish people during this period, with the aim to secure as clear and complete an understanding as possible of the conditions under which Jesus began his ministry.

In the Junior Year the sources of the text of the New Testament are considered with the principles employed in determining the true text, the aim being to render the student intelligent as to the procedure in Textual Criticism, and the bearing this procedure has on the work of exegesis. The History of the Canon for the first two centuries, and the historical and literary criticism of the Gospels, are next treated, to secure on the part of the student an understanding of the principal problems involved and the grounds of their discussion, the habit of sober and sound criticism, and a knowledge of the nature and contents of the Gospel writings.

In dealing with the Life of Jesus, notes on methods of correct interpretation are given the class, and their application is required in its exegetical work. The significant points and phases in the life and ministry of Jesus are selected and considered, passages from the Greek of the Synoptic Gospels being employed, to obtain a knowledge of the mind of Jesus, his relations to the parties and people of his times, the methods he pursued in his ministry, the course of facts in his life, and the doctrines he taught. Incident to this study, the critical points in dispute are considered as they arise. Historical and archæological questions are examined in their natural connections.

In the Middle Year the History and Doctrines of the Apostolic Church are studied, the Book of Acts being used as the basis. This writing is first examined as an historical authority; passages from it in Greek are chosen, giving the significant stages in the external growth of the church and in its internal development; and these are studied with the aim to trace the first realization of the life of Jesus in the world. The Epistles of St. Paul are critically examined in the order of their origin in his ministry. The introduction to Hebrews and to the Catholic Epistles concludes the year's work.

As a part of this study the Theology of the New Testament is taken up. The attempt is made to discover the teaching of Jesus contained in the Synoptic Gospels. With this teaching as the basis, the individual interpretations of the several Synoptists, of the author of the Fourth Gospel, of St. Paul in his earlier and later epistles, of the author of Hebrews, and the writers of the Catholic Epistles, are compared, each writing being first considered by itself. The aim is to obtain the common elements of teaching, and also what is distinctive in each writer and time.

In the Senior Year the problem of the Fourth Gospel is considered: the question of its use among the early Fathers, its internal character and its relation to the other New Testament writings, and to the thought of the Apostolic Church.

**Church History.** — The purpose is to secure a knowledge of the leading facts and forces in the history of the Christian Church in its various branches. By such a knowledge, discovering the causes now at work in religion, the student obtains a grasp of present facts and problems such as he can obtain from no other source. Incidentally he becomes familiar with theological terms, and is furnished with the tools of theological work. In general, since in some degree the individual grows as the mass has grown, he finds in this study an education, an orderly development of his faculties.

The topics generally studied in regard to each period are: The External Growth of the Church, and its relations to the State; the Internal Organization; Intellectural Life and Doctrine; Moral Life; the Form and Substance of Worship. In the latter part of the year special study is made of the chief religious sects in the United States, and, lastly, of the History of Doubt.

The books used by the student are mostly contained in the Library of |the College and in that of the Universalist Historical Society. They include Migne's edition of the Fathers; translations of the anti-Nicene Fathers, and others; the chief secondary authorities on general Church History, such as the works of Schaff, Fisher, Neander, Alzog; and the special historical works of Fisher, Müller, Dorner, Briggs, Eddy, Ballou; and of the American Church History series.

In preparation for the regular class-room exercise, the student is provided with an analysis of each topic in order, and with references to original and secondary authorities. The student brings the result of his investigation to the class-room for criticism by his associates and instructor. At the completion of each topic the results are organized, and a written review held, the papers of which are returned, with comments as to truthfulness and mode of handling.

The students are also instructed in the methods of original investigation from primary authorities; and especially in the history of doctrines, they prepare several pieces of original work during the year.

**Comparative Theology.**— The primary aim of this study is a general knowledge and a catholic temper regarding the non-Christian religions. A secondary utility is found in that a candid study of the excellencies and defects of many religions renders the student more able to reject the false, and more inclined to rest in the true, and to give it his confidence and strength.

The sources of information to which the student is referred are the Records of the Past, Müller's edition of the Sacred Books of the East, Müller's own writings, the series entitled Non-Christian Religious Systems; and, in addition, the works of Rawlinson, Wilkinson, Sayce, Johnson, Barth, Legge, Oldenberg, Edkins, Haug, and others. Considerable use is also made of articles in the Encyclopædia Britannica.

The religions studied are those of ancient Egypt and Chaldæa; Hinduism, ancient and modern; the religions of Gautama Buddha, Confucius, Lao-tse, Zoroaster, and Mohammed.

The chief topics noted are: The Deity; the Forms and Meaning of Worship; the Theory of Ethics, and the Sanctions of Moral Life, including the Scheme of Salvation; the Actual Condition of the People representing each religion.

For the study of each topic in turn, the class is furnished with a syllabus and references. The results of their investigations are criticised and co-ordinated by students and instructor in the class-room.

The main purposes of this study are further secured by frequent inductive reviews, oral and written.

**Ethics.**— Analytical and inductive study of the moral experience is followed by an attempt to develop a correct moral theory. Attention is given to the leading questions in ethical philosophy. Such doctrines as Sentimentalism, Hedonism, Utilitarianism, Intuitionalism, and Determinism are studied not merely in a critical spirit, but with a view to discover the special aspects of truth for which they stand.

During the second half of the year the class attends more especially to Practical Ethics, dealing with the leading contemporary problems, such as Education, Charities, State Aid, Temperance, Socialism, etc. Some attention is also given to Casuistry. The course concludes with a review of what is distinctively know as Christian Ethics. The instruction throughout is shaped to bring into clearness the fundamental principles of morality, and to show their importance in the conduct of the personal life and in the moral guidance of others.

**Philosophy of Theism.**— After some discussion of Agnosticism and other antecedent objections to Theism, the various modes of the theistic argument are reviewed, their grounds scrutinized and their logical value carefully considered. In discussing the attributes of God, and his relation to the universe, Pantheism and Pessimism receive somewhat special notice. The general method here, as in ethics, is to employ treatises available as texts, and to supplement them by means of annotations, lectures and parallel readings, the aim being to lead the student to the sources of evidence, and to establish a vigilant and correct method of inquiry. Much importance is attached to the dialectic of the class-room, as securing a ready command of resources, and as a corrective of ill-defined notions and hasty inference. An effort is made to treat subjects in the light of contemporary criticism and the latest developments of science ; and, by testing and chastening conclusions, to provide against fanaticism on the one hand, and frivolity of judgment on the other.

**Systematic Theology.**— The purpose is, primarily, to assist the student to think independently on theological subjects, and to abide in the consequences. In pursuing this purpose attempt is made to co-ordinate the products of Biblical Theology, Religious History, Natural Theology, Ethics, and, indeed, of all the proper sources of material, and thus to produce a scientific theology. It is believed that such a system will deserve and receive the student's confidence, and will enlist his energies.

The subject has four great divisions,— the Doctrine of God, the Doctrine of Man, the Doctrine of Salvation, and the Doctrine of the Future Life. The traditional sub-divisions are noted historically, but are accepted only so far as they seem to rest on essential principles or the real relations of truth.

The method includes several stages: —

1. The outline history of thought on the topic in hand, or the analysis and classification of opinions and theories according to their logical relations.

2. The collection of the facts, so far as given in the present state of knowledge, and the criticism of the theories on the basis of the facts.

3. The organization of the results into a scientific product.

4. Illustrative applications to practical problems,— ecclesiastical, political, social, and personal.

This method requires frequent reference to books used in the departments whose products are here co-ordinated, and to the theological works of A. H. Strong, Charles Hodge, James Martineau, Robert Flint, J. A. Dorner, H. Martensen, J. Müller, and other representative teachers of all times and faiths.

The student is furnished with references to the various sources of material, he is instructed in the method of inquiry, and his results are criticised in the class-room. The occasional written examinations require original work, in part, and one original essay from each student is required within the year.

**Homiletics.**— The course in Homiletics covers one half of the Junior year and all of the Middle and Senior years, and includes the study of the most characteristic and instructive periods in the history of preaching; dictations and lectures on the idea and structure of the Sermon; analyses of portions of the Old and the New Testaments, with a view to the homiletical use of texts; the study of printed sermons, with special reference to form, expression, and the character and range of illustration; the composition and delivery of sermons, not less than six during the year, all of which are criticised by the class and by the professor; lectures during the Senior year on Invention and Arrangement of Material, Modes of Development, Style in Spoken Discourse, Helps in Sermon-Preparation, Illustrations and Use of Anecdote, the Homiletic Habit, Modern Schools of Preaching, Philosophy of Preaching, Personality in Preaching, Character and Preaching.

**Applied Christianity.** — I. The History of Christianity is traced from its beginnings, with the special aim to discover by what methods the application of Christian principles has been secured and what results have followed.

II. The second part of this course is devoted to a study of Christian principles in their present day applications, and of the Christian Church as it exists in modern times. Two principles are assumed as fundamental. (1) The office of the church is primarily that of spiritual culture. (2) The mission of the church is primarily to the individual. With these principles in view, an examination is made of the various forms of Christian activity, with a view to ascertain their value and place in the church. The discussion includes the more personal ministrations of the church to its immediate constituency, and its more extended activities in society. This last involves questions relating to socialism, good citizenship, economic and moral reforms, and the like.

III. The final topic in this department is the pastor's office. The subjects discussed relate to the more private and personal care which the minister exercises toward the members of a single congregation, or toward others whom he may be expected to influence. Careful study is invited to the qualifications, spiritual, mental, social, of a good pastor, the methods of forming and strengthening a parish, the conduct of public worship, and the mode of conducting the special services of the church,— baptism, confirmation, the Lord's Supper, marriage, and the burial of the dead. The object in this part of the course is the practical preparation of the pastor for his sacred duties.

The work (II and III) of the Middle and Senior years is supplemented with lectures by clergymen and others, who are actively engaged in missions and charities; and the students are encouraged to visit churches and stations in the neighboring cities, that they may study methods in the field.

**Oratory.** — The object of the instruction in the department of Oratory is a natural, impressive, and reverent manner of reading the Bible and the hymn-book, and also to cultivate in preaching a delivery that shall be forcible and sincere. To this end the work of the first year involves consideration of the fundamental principles that underlie all oratory, accompanied by practice to assimilate these principles. In the second year the practice becomes specifically adapted to the needs of students of divinity, and includes Scripture and hymn reading, and the preaching of both written and unwritten discourse.

**Physical Training.** — Regular exercise in the Gymnasium is ordinarily required three hours a week of men students from the middle of November to the middle of March during the two years following entrance. The kind of exercise prescribed for each man depends on his physical condition, as determined by careful medical examination. Provision is made for continuing physical exercise throughout the whole course, according to individual needs.

# General Information.

## RELIGIOUS EXERCISES.

Devotional exercises, conducted by the professors and the students, are held daily in the chapel. Members of the upper classes prepare sermons and preach them in turn before the class. An active branch of the Young People's Christian Union holds regular meetings for religious conference.

## EXAMINATIONS.

Frequent written reviews are held in all departments; and when any subject is completed, the students are required to pass a written examination thereon.

## LIBRARIES AND LECTURES.

Students have free access to the general library of the College and to the valuable library of the Universalist Historical Society. Important public libraries of Boston are open to students for consultation.

Supplementary lectures, which bear upon the general work of the Christian ministry and upon special subjects of study, are given at intervals throughout the year by well-known clergymen of the vicinity.

## ELECTIVE STUDIES.

Students are permitted to elect studies in other departments of the College, subject, however, to the discretion of the Faculty. Opportunities for pursuing advanced studies are offered to graduates and to others sufficiently qualified.

## GENERAL FACILITIES.

Important facilities for general improvement are offered to students, in the valuable libraries and museums of Boston and

vicinity. Elaborate courses of lectures on scientific, social, and literary subjects are presented to the public from time to time. The most noted divines of New England officiate every Sunday within easy distance, and may be studied by the student in respect to their teachings and their methods. It is the policy of the school to encourage the judicious use of these important instrumentalities of culture.

## THE DEGREE OF MASTER OF ARTS.

THE DEGREE OF MASTER OF ARTS is conferred at the same time with the degree of Bachelor of Divinity upon Bachelors of Arts of Tufts College who have pursued with distinction the full course for B. D. This degree is conferred under the same conditions on Bachelors of Arts of other colleges, whose courses of study have been equivalent to the course for which the degree of A. B. is given by Tufts College.

This degree may also be received by Bachelors of Arts who do not apply for the degree of Bachelor of Divinity, after taking with credit an approved course of one year or more in this school, under conditions defined in the statement of the Graduate Department.

## BUILDINGS FOR THE USE OF THE DIVINITY SCHOOL.

Miner Theological Hall contains eight large, well-lighted, and well-ventilated lecture rooms, and a special room for the meetings of the Faculty. Until other buildings are provided one of the rooms in this hall is used for the Historical and Reference Libraries, and one is appropriately furnished for the Religious Services of the school. A third room in the same hall is furnished as a parlor, and known as the Maria Miner Reception Room.

Paige Hall, the dormitory of the Divinity School, contains thirty-six single rooms, heated by steam and lighted by gas. Each room is carpeted, and provided with all necessary furniture — except sheets, blankets, pillow-cases, and towels.

Rooms are assigned in the order of application, but no room is reserved for any applicant who does not appear within one week of the opening of the college year.

The women students in the Divinity School may find rooms and board in Metcalf Hall on the same terms and subject to the same conditions as apply to the women who enter the College of Letters.

## EXPENSES AND PECUNIARY AID.

Beginning with the college year 1897–98, students in the Divinity School will be charged *one hundred dollars* annually for tuition. This charge will include the privilege of occupying a room in Paige Hall, and provision for heating and caring for it. A remission of one half of this amount may be made by the Executive Committee of the Trustees to students who cannot be accommodated in Paige Hall or who live at home. The necessary expenses for board, washing, gas, and gymnasium charges do not exceed two hundred dollars a year. The General Convention of Universalists aids students by a system of loans not exceeding one hundred and fifty dollars a year to any one student; and the Faculty of the Divinity School is authorized to assign Dockstader scholarships to those whose circumstances require it. Those students, also, who are in the regular course are permitted to preach, under the direction of the Faculty, during the year and a half preceding their graduation. In this way they may add to their pecuniary resources.

## BONDS AND DEPOSITS.

Each student who enters the Divinity School is required to deposit with the Treasurer of the College either a bond, with two satisfactory sureties, for the amount of one hundred dollars, or the sum of fifty dollars in money, which sum will bear interest at the rate of four per cent yearly, and will be returned to the student when he leaves the Divinity School, his term bills first being paid in full.

## LICENSE TO PREACH.

The regular time for applying for licensure is near the close of the first half of the middle year. Before that time the members of the Divinity School are not allowed to preach.

## SCHOLARSHIPS AND SPECIAL FUNDS.

THE GREENWOOD SCHOLARSHIP.— The income of one thousand dollars, bequeathed by the late Mrs. Eliza M. Greenwood, of Malden, is given in prizes to members of the Divinity School for excellence in the department of Oratory.

THE DOCKSTADER SCHOLARSHIPS.— The income of ten thousand dollars, given by George A. Dockstader, of New York, is appropriated to the aid of needy and worthy students.

The following scholarships of fifty dollars each are for the benefit of students of the Divinity School: —

THE WHITTEN SCHOLARSHIP, — Founded by Mrs. Maria F. Whitten, of Cambridge.

THE HOLT SCHOLARSHIP, — Founded by Miss Celia Holt, of Stafford, Conn. Available in the Divinity School after four years, during which it is assigned to a beneficiary in the College of Letters, designated by the donor.

THE HENRY L. BALLOU SCHOLARSHIP, — Founded by Susan Ballou, of Woonsocket, R. I.

TWO BRADLEE SCHOLARSHIPS, — Founded by the late Caleb D. Bradlee, D. D., of Brookline.

TWO GOLDTHWAITE SCHOLARSHIPS, — Founded by the late Willard Goldthwaite, of Salem.

The income of five hundred dollars, given by REV. JOHN VANNEVAR, is used in the purchase of books for the Department of Homiletics.

# THE MEDICAL SCHOOL

# Faculty of the Medical School.

ELMER H. CAPEN, D. D., President.

JOHN L. HILDRETH, A. B., M. D., 14 Garden Street, Cambridge.
Dean *and Professor of Clinical Medicine.*

CHARLES P. THAYER, M. D., 74 Boylston Street, Boston.
Secretary *and Professor of General, Descriptive, and Surgical Anatomy.*

HENRY W. DUDLEY, M. D., Abington.
*Professor of Pathology.*

WALTER L. HALL, M. D., Medford.
*Professor of the Principles and Practice of Medicine.*

FRANK G. WHEATLEY, A. M., M. D., North Abington.
*Professor of Materia Medica and Therapeutics.*

SAMUEL G. WEBBER, A. B., M. D., 146 Marlboro Street, Boston.
*Professor of Neurology.*

ERNEST W. CUSHING, A. B., M. D., 168 Newbury Street, Boston.
*Professor of Abdominal Surgery and Gynæcology.*

ARTHUR E. AUSTIN, A. B., M. D., 585 Washington St., Dorchester.
*Professor of Medical Chemistry and Toxicology.*

CHARLES A. PITKIN, A. M., Ph. D., South Braintree.
*Professor of General Chemistry.*

HAROLD WILLIAMS, A. B., M. D., 528 Beacon Street, Boston.
*Clinical Professor of the Diseases of Children.*

JOHN A. TENNEY, M. D., 2 Commonwealth Avenue, Boston.
*Professor of Ophthalmology.*

WALTER CHANNING, M. D., Brookline.
*Professor of Mental Diseases.*

THOMAS M. DURELL, M. D., Somerville.
*Professor of Medical Jurisprudence.*

FREDERICK L. JACK, M. D., 215 Beacon Street, Boston.
*Professor of Otology.*

GEORGE H. WASHBURN, A. B., M. D., 311 Marlboro St., Boston.
*Professor of Obstetrics.*

FREDERIC M. BRIGGS, A. B., M. D., 299 Beacon St., Boston.
*Assistant Professor of Clinical Surgery.*

CHARLES G. CUMSTON, B. M. S., M. D., 871 Beacon St., Boston.
*Assistant Professor of Surgical Pathology.*

TIMOTHY LEARY, M. D., Hotel Langham, Boston.
*Assistant Professor of Pathology and Instructor in Bacteriology.*

## OTHER INSTRUCTORS.

WILLIAM R. WOODBURY, A. B., M. D., 164 Newbury St., Boston.
*Lecturer on Hygiene, and Instructor in Nervous Diseases.*

WALTER J. OTIS, M. D., 267 Beacon Street, Boston.
*Lecturer on Rectal Diseases.*

WILLIAM S. BOARDMAN, A. B., M. D., 57 Hancock St., Boston.
*Lecturer on Laryngology.*

GEORGE A. BATES, D. D. S., Auburndale.
*Lecturer on Histology.*

GEORGE A. WEBSTER, M. D., 28 Greenwich Park, Boston.
*Instructor in Otology.*

EDWARD E. THORPE, M. D., 711 Boylston Street, Boston.
*Instructor in Medical Chemistry.*

HOWARD S. DEARING, A. M., M. D., 607 Tremont Street, Boston.
*Instructor in Clinical Medicine.*

HERBERT WARREN WHITE, M. D., 161 Warren Street, Roxbury.
*Instructor in Clinical Medicine.*

E. CHANNING STOWELL, A. B., M. D., 9 Massachusetts Ave.,
*Instructor in Children's Diseases.* Boston.

THEODORE HOUGH, A. B., PH. D., 72 Pinckney Street, Boston.
*Instructor in Physiology.*

EDWARD L. TWOMBLY, A. B., M. D., 406 Massachusetts Ave.,
*Clinical Instructor in Medicine.* Boston.

WARREN F. GAY, A. B., M. D., 416 Marlboro Street, Boston.
*Instructor in Surgery.*

JOSEPH C. STEDMAN, M. D., Warren Chambers, Boston.
*Instructor in Rectal Diseases.*

EDGAR GARCEAU, M. D., 22 Highland Street, Roxbury.
*Clinical Instructor in Gynæcology.*

CHARLES D. KNOWLTON, M. D., 18 Hancock Street, Boston.
*Demonstrator of Anatomy.*

ALBERT E. ROGERS, M. D., 143 Washington Street, Dorchester.
*Instructor in Materia Medica and Therapeutics.*

GARDNER W. ALLEN, A. B., M. D., Warren Chambers, Boylston
*Instructor in Genito-Urinary Surgery.* Street, Boston.

GEORGE F. HARDING, M. D., Warren Chambers, Boylston St.
*Instructor in Dermatology.* Boston.

CHARLES F. PAINTER, A. B., M. D., 416 Marlborough St., Boston.
*Instructor in Orthopœdic Surgery.*

HORACE D. ARNOLD, A. B., M. D., 188 Warren Street, Roxbury.
*Instructor in Clinical Medicine.*

CHARLES H. HARE, A. M., M. D., PH. B., 285 Marlborough St.,
*Instructor in Gynæcology.* Boston.

THOMAS F. GREENE, M. D., 316 Warren Street, Roxbury.
*Assistant Demonstrator of Anatomy.*

JOHN I. FRENCH, M. D., 2A Park Street, Boston.
*Assistant in Materia Medica and Therapeutics.*

JAMES C. D. CLARK, M. D., Salem St., Medford.
*Assistant in the Theory and Practice of Medicine.*

EUGENE THAYER, A. B., M. D., 2683 Washington Street, Boston.
*Assistant Demonstrator of Anatomy.*

## Laboratory Assistants.

JOHN J. MCNAMARA, Brockton.
*General Chemistry.*

GEORGE F. HUGHES, West Somerville.
*Medical Chemistry.*

## STANDING COMMITTEES OF THE MEDICAL SCHOOL.
## 1897-98.

EXECUTIVE COMMITTEE.— The President, Dean, Secretary, and Drs. Wheatley and Williams.

BUILDING.— The President, the Dean, the Secretary, and Drs. Channing, Cushing, Wheatley, and Williams.

CATALOGUE.— Drs. Thayer, Williams, and Briggs.

NOMINATIONS.— The Dean, Drs. Channing and Wheatley.

LIBRARY.— Drs. Jack, Webber, and Cumston.

COURSE OF INSTRUCTION.— The Dean, Drs. Williams and Cushing.

ADMISSION.— Drs. Dudley, Hall, and Durell.

EVENING LECTURES.— Drs. Briggs, Williams, and Channing.

DISPENSARY.— The Dean, Drs. Williams and Briggs.

# The Medical School.

The Tufts College Medical School was established in Boston in 1893. It is coeducational, women being admitted on the same terms as men. The school building is a handsome stone structure situated upon the corners of Rutland Street, Shawmut Avenue, and Newland Street, and has cost in the neighborhood of $75,000.

The site was selected because of its proximity to the Boston City Hospital, the Boston Dispensary, and other charitable institutions; because of its easy accessibility to all parts of the city by means of the electric cars, which pass the door; because of the quiet of the neighborhood; and because its situation in the residential portion of the city afforded opportunities for the inexpensive boarding and lodging of students.

The arrangement of the school building itself is the outcome of the carefully matured deliberation of a building committee of the Faculty which visited the principal medical schools of New York, Philadelphia, and Baltimore. The plans, elaborated by Mr. George A. Clough, the architect of the Suffolk County Court House, in Boston, and other large public and school buildings, have resulted in a medical school which cannot be surpassed by any similar institution in New England.

At the rear of the building, and with a separate entrance on Newland Street, is the college dispensary. This department of the school, which is an innovation for New England medical schools, consists of a common waiting room for patients, a dispensing department, a surgeon's room, and a physician's room. It is believed that this feature will be of the utmost value to the students by familiarizing them with the practical treatment of patients, and the nature and dispensing of drugs. Fourth year students will be required to serve in this department as clinical assistants to the various instructors. At the expiration of each term of service they will receive a certificate stating that they have served as such; but no certificates will be given unless the work has been faithfully performed. In the third year, students (in sections) will study the cases that are treated at these clinics. The advantage of this system of giving so much of the instruction under one roof is too apparent to require comment.

The building is lighted by electricity and gas, and is heated throughout by steam. It is ventilated in every part by an elaborate system, by means of which fresh air is taken directly from out of doors. The impure air is carried off by an exhaust apparatus in the roof. Hygienic perfection has been aimed at, and it is hoped that the hitherto objectionable and injurious features of medical schools will be completely avoided.

During the past year many changes have taken place in the administration of the school; a new chair has been created, and the list of instructors has been still further augmented.

## CLINICAL ADVANTAGES.

Boston, as the largest city in New England, offers unusual facilities to the student of medicine. The amphitheatres of the Boston City Hospital, the Massachusetts General Hospital, the Massachusetts Charitable Eye and Ear Infirmary are open to students, and opportunity is thus afforded for witnessing the more extensive surgical operations.

Clinics are held at the Boston City Hospital, the Massachusetts Eye and Ear Infirmary, and at the Boston Dispensary, which latter, as the largest medical charity in Boston (42,587 cases were treated last year), affords an unsurpassed field for familiarizing the student with the various forms of disease. The school dispensary offers unusual clinical advantages. Members of the medical and surgical staff are also connected with various other institutions, among which may be mentioned the St. Elizabeth Hospital, the Somerville Hospital, the Cambridge Hospital, the Woman's Charity Club Hospital, the Free Hospital for Women, the Tremont Dispensary, and so far as possible the material thus afforded will be utilized for the benefit of the students.

# Departments of Instruction.

## Anatomy.

PROFESSOR THAYER.
DRS. KNOWLTON, GREENE, AND THAYER. } *Five hours a week.*

The course in Anatomy comprises, for the Freshman year, lectures, recitations, and demonstrations, illustrated by plates, models, and dissections. During the second year especial attention is devoted to Applied and Surgical Anatomy, and the relations of parts and organs in the various regions of the body are referred to, and their importance in the operations is emphasized and explained. In the dissecting room the student is required to carry on his work with neatness and precision, under the supervision of the Demonstrator, thus acquiring that familiarity with the use of instruments which is essential to the practitioner. The new dissecting room is fitted with all modern conveniences, and is under the personal supervision of the Professor of Anatomy. The dissections are made under the direction of the Demonstrator of Anatomy or his assistants, who will give all necessary assistance and advice. Abundance of material is furnished students at cost.

## Histology and Embryology.

DR. BATES. *Four hours a week*

The course in Histology is both didactic and practical, and consists of one hour of lecture and three hours of demonstration each week. The aim of the department is to present the subject comprehensively, beginning with the simple tissues, and by easy gradations presenting the more complicated structures of the body, thus enabling the student to acquire an intimate knowledge of the minute anatomy.

The department is equipped with microscopes and all materials necessary for practical demonstration.

The subject of Embryology is presented from the standpoint of the physician, the aim being to give the student such a knowledge of the subject as to enable him not only to comprehend those elements which are essential for his obstetrical work, but also to classify the tissues of the body according to our best knowledge of their origin in the embryo.

### Physiology.

DR. HOUGH. *Three hours a week.*

This branch is taught by means of lectures, recitations, and demonstrations. Beginning with a brief consideration of the more important groups of compounds of which the body is composed and to which it gives rise, the student passes to the study of the general chemical characters and reactions of blood and lymph, and of their relation to the tissues; this is followed with the physiology of muscle and nerve, especial emphasis being placed upon the phenomena of irritability, conductivity, utilization of energy, fatigue, etc., which these tissues present, and which make them more or less typical of living cells of all kinds. The remaining parts of the subject are then taken up in the following order: The circulation of the blood, digestion and absorption, respiration, excretion, nutrition, the central nervous system, the organs of special sense. It is the object of the course to give the student that thorough knowledge of the functions of the organs and tissues of the healthy human body, without which he cannot hope to pursue to the best advantage the study of the abnormal conditions and workings of disease.

### General Chemistry.

PROFESSOR PITKIN. *Five hours a week.*

This course consists of Descriptive Chemistry and Qualitative Analysis, with so much of Theoretical Chemistry as is necessary for a proper understanding of the subject.

The classification of the carbon compounds, also, is taken up at considerable length, and special reference made to those which are of interest in the study of medicine. The instruction is by lectures, recitations, and practical work by the students in the laboratory. Much attention is given to Qualitative Analysis, both for the sake of the valuable training which it imparts and the knowledge of Chemistry which is incidentally gained. The importance of this knowledge is evinced by the fact that it is the only non-professional subject which is required in most medical schools. The aim is to impart such information in Chemistry as is necessary to the intelligent physician. At the same time any who wish to pursue the study further than is required of every graduate may do so by special arrangement.

Certificates of satisfactory completion of Courses 1, 2, and 3 in Chemistry in the Academic Department of Tufts College, or of the same courses in the Summer School, will be accepted in the Medical School in place of General Chemistry.

### Materia Medica and Therapeutics.

| | |
|---|---|
| PROFESSOR WHEATLEY.<br>DR. FRENCH. | *Three hours a week.* |

Instruction in this department consists of lectures and recitations, three hours a week during the year. Medicines will be exhibited as far as possible. Therapeutics will receive especial attention.

The metric system will be taught, and the ability to write prescriptions in both the old and new systems will be insisted upon.

A reasonable amount of time will be devoted to the late additions to the Pharmacopœia.

### Medical Chemistry.

| | |
|---|---|
| PROFESSOR AUSTIN.<br>DR. THORPE. | *Six hours a week required.*<br>*Twenty hours weekly optional.* |

This subject as taught here includes physiological and clinical chemistry and toxicology.

It is believed that the most thorough laboratory work should accompany instruction in the lecture room. To this end practical examinations of blood, saliva, gastric juice, bile, and urine are made, with their clinical features constantly in view. Careful work is done on milk and fæces also, besides proteins, proteids, albuminoids, starches, sugars, and fats occurring in the body. Arrangements are made by which students may receive five hours' individual instruction daily if desired, and aid will be given those pursuing special investigations.

Toxicology is taught in its medico-legal and clinical aspect. In the laboratory the students learn to isolate metallic and alkaloid poisons from organic mixtures, food stuffs, vomitus, and blood.

The great importance of ptomaïns, especially as a source of error relative to alkaloids, is carefully shown.

Weekly papers are issued, embodying the methods of Hammarsten, Bunge, Neumister, Salowski, and others.

### Pathology.

| | |
|---|---|
| PROFESSOR DUDLEY.<br>ASSISTANT PROFESSOR LEARY. | *Five hours a week.* |

Instruction in this department will consist of lectures, recitations, demonstrations, and practical laboratory work.

Demonstration of gross pathological specimens, obtained from operations and autopsies at the Boston City Hospital and other institutions, will take place once a week. This work will include the demonstration and recitation by students on pathological specimens.

For the work in pathological histology, two hours per week are required. Students will mount and make drawings, specimens comprehending all of the subjects of general pathology. Each student will be required to pass a satisfactory examination on the laboratory work.

It will be the aim to make clear the importance of a thorough knowledge of the causes, course, and results of pathological processes.

Microscopes will be loaned to those students who do not possess one, for a small fee.

### Bacteriology.

DR. LEARY. *Four hours a week.*

Instruction in Bacteriology consists of lectures, recitations, and a practical laboratory course. While attention is paid to the technical details of laboratory work, the relation of bacteria to the diseases which they produce, the elaboration of toxines, the subject of immunity, and the important bearings of asepsis, antisepsis, and disinfection are especially emphasized. Particular attention is also paid to the application of all practical bacteriological tests made use of in medicine. The new bacteriological laboratory presents added facilities for the intelligent demonstration of this subject.

The optional course offered in this subject for fourth-year students will consist wholly of laboratory work. Instruction will include the manufacture of nutrient media, bacteriological diagnosis, test work with antiseptics and disinfectants; and every opportunity for advanced work will be furnished to students who desire to carry on original investigation.

### Surgical Pathology.

ASSISTANT PROFESSOR CUMSTON. *One hour a week.*

The course in Surgical Pathology will be divided into two parts.

The first will cover the following subjects: Inflammation; suppuration; gangrene; ulceration; septicemia; pyemia; sapremia; the surgical infections; erysipelas; anthrax; tetanus; tuberculosis; syphilis; gonorrhœa; ulcus molle and actinomycosis.

The second part will include the repair of tissues; neoplasms and disease of special tissues and organs.

### Theory and Practice of Medicine.

PROFESSOR HALL. }
DR. CLARK. } *Four hours a week.*

This course consists of two lectures each week by Professor Hall, covering the whole ground of general medicine, comprising in all sixty lectures, and a thorough examination is given by the Quiz-master upon every lecture, two hours per week being devoted to this work. The didactic lectures of this course are fully exemplified by cases presented in the course of clinical medicine. It is considered necessary for the student to be well founded in the theory of medicine before taking up to any great degree the bed-side study of disease.

### Clinical Medicine.

PROFESSOR HILDRETH.
DRS. DEARING, WHITE, AND TWOMBLY. } *Two hours a week.*

Instruction in this department is given by clinical lectures, visits to the dispensary, and other exercises. Students are furnished cases and required to report upon them. Auscultation and Percussion and Laryngoscopy will be taught both theoretically and practically. The subject of diagnoses and the writing of reports of cases will also receive especial attention.

### Neurology.

PROFESSOR WEBBER. *One hour a week.*

There will be one lecture each week, during the term, upon diseases of the nervous system. As preparatory to these, there will be a brief review of the anatomy and physiology of the nervous system so far as necessary to understand the relations of the symptoms to organic changes in the nerve centers. The anatomy of the brain will be demonstrated with special reference to localization of cerebral diseases. The lectures will be both clinical and didactic, and will be illustrated by diagrams, photographs, and microscopic preparations.

### Mental Diseases.

PROFESSOR CHANNING. *One hour a week.*

Instruction in this branch will consist of a course of lectures so arranged as to cover the whole subject of mental diseases. The lectures will be of a practical nature and will be adapted to the requirements of the general practitioner. They will be illustrated so far as possible by the exhibition of cases.

### Diseases of Children.

PROFESSOR WILLIAMS. }
DR. STOWELL. } *Two hours a week.*

Instruction in this department consists of clinics, lectures, clinical conferences and visits to sick children at their homes. The clinical advantages offered to students in this department are very great, and examples of nearly all the affections of infancy and childhood are shown to the students, including such rare diseases as are seldom seen outside the clinics of a large city. A course of didactic and clinical lectures, including the anatomy and hygiene of infancy and childhood, is given by Dr. Williams, and special clinical instruction in the auscultation and percussion of children and the contagious diseases is given by Dr. Stowell, who receives the members of the class in small sections. Hour examinations are held in this department once every two months.

### Legal Medicine.

PROFESSOR DURELL. *One hour a week.*

The course in Legal Medicine consists of one lecture each week during the first term, and will include all of the subjects which are usually included under the head of medical jurisprudence, together with a thorough course in the making of medico-legal autopsies, with as many practical demonstrations as possible. The duty of a physician to the Commonwealth, and his rights, both as a medical expert and as an ordinary witness, will be explained.

### Surgery and Clinical Surgery.

ASSISTANT PROFESSOR BRIGGS. }
DRS. GAY AND PAINTER. } *Six hours a week.*

The instruction in this department will consist of lectures, recitations, demonstrations, and clinical teaching upon the subject of general surgery. A course in operative surgery is given during the year, where students are required to perform the various operations upon the cadaver. Bandaging and apparatus receive careful attention, and each member of the Senior class is personally instructed in all the details. Etherization is taught by practical demonstrations, and it is endeavored to give each student opportunities of administering ether, thereby learning by practical experience the technique of anæsthesia. Commencing in January, there is a series of clinical conferences at which students present for discussion a full report of cases previously assigned. The surgical clinic at the school dispensary (in the building) will be open daily, except Sunday, throughout the year; the surgical department at the Boston Dispensary is open from July 1 to January 1, and the students of this school have numerous opportunities of witnessing all the operations in a number of hospitals, some directly, others not directly connected with this school.

### Abdominal Surgery.

Professor Cushing will give one lecture weekly for twenty-one weeks, to the students of the Senior class, on Abdominal Surgery, including hernia, appendicitis, and the major operations on the female generative organs.

He will also give several demonstrations of the various operations, on the cadaver.

### Otology.

PROFESSOR JACK. }
DR. WEBSTER. } *Two hours a week.*

Instruction in this department will consist of lectures and clinical teaching. Clinics will be held at the Massachusetts Charitable Eye and Ear Infirmary, where nearly five thousand patients with ear disease are annually treated.

### Genito-Urinary Diseases.

DR. ALLEN.

The various diseases of the Genito-Urinary system will be considered and illustrated by cases as far as practicable.

### Diseases of the Rectum.

DRS. OTIS AND STEDMAN.

Instruction in this department will be given by Drs. Otis and Stedman at the Boston Dispensary.

### Ophthalmology.

PROFESSOR TENNEY. *One hour a week.*

This course will be of the most practical character possible, being designed to give the general practitioner such knowledge of the subject as is essential in his practice. The lectures, which are given once a week through the school year, will be fully illustrated by schematic representations, and again by clinical material, which is ample for that purpose.

### Laryngology.

DR. BOARDMAN.

Instruction in Laryngology and Rhinoscopy will be given by Dr. Boardman at the Boston Dispensary, beginning Jan. 1, 1897, and continuing until April 1. The students of the Senior class will be divided into sections, and will visit the clinic of Dr. Boardman on Tuesdays, Wednesdays, Thursdays, and Fridays of each week, where an opportunity is afforded them for studying the diagnosis and treatment of diseases of the throat and nose by actual examination of the patients. The object of the course is to give instruction in cases of this class which are liable to come under the observation of the general practitioner, such as adenoid growth, diphtheritic false membranes, syphilis, tuberculosis, etc. The subject is also illustrated by lectures and diagrams.

### Dermatology.

DR. GEORGE F. HARDING. *Two hours a week for twelve weeks.*

This course is a clinical one in which cases are shown by Dr. Harding in the departments for diseases of the skin, in the Boston City Hospital and in the Carney Hospital.

### Obstetrics.

PROFESSOR WASHBURN. *Three hours a week.*

Instruction in this department will consist of lectures, recitations, conferences, and clinical teaching. Lectures will be illustrated by plates and the use of the manikin. Each student will be required to care for at least two cases, clinical instruction being given with one of these, attending them throughout convalescence and handing in a written report of the same. Some of these reports will be read before the class, and subjected to discussion and criticism by class and instructor.

### Gynæcology.

PROFESSOR CUSHING. *Three hours a week.*
(DRS. GARCEAU AND HARE.)

Instruction is given both by lectures and by clinical teaching. Professor Cushing lectures once each week to the Senior class, and twice weekly sub-divisions of the class receive practical instruction from Instructor Garceau. Once each week a quiz is held by Assistant Hare on the lectures of Dr. Cushing. Arrangements have been made by which students of the Senior class, who wish to continue their studies after graduation, may witness operations in the hospital services of Dr. Cushing.

Dr. Holden has also kindly consented to continue to give clinical instruction to a limited number of students at the Staniford Street Dispensary.

### Orthopedic Surgery.

DR. CHARLES F. PAINTER. *Two hours a week.*

This course consists of lectures and clinical demonstrations under the charge of Dr. Painter, and is given at the Boston Dispensary. The duration of this course will be subsequently announced.

Courses of instruction are open to the students at the clinics of the Free Hospital for Women, on payment of a moderate fee.

## TEXT-BOOKS.

The first book mentioned is preferred as a text-book, the others being recommended as collateral reading.

**Anatomy:** Gray, Quain, Morris, Weisse, Holden, Cunningham's Dissector.

**Physiology:** Foster, Kirkes' Handbook (13th edition), Landois and Sterling, Martin's Human Body, Flint.

**General Chemistry:** Witthaus (last edition), Remsen's Laboratory Manual, A. H. Elliott's Qualitative Analysis.

**Histology:** Schäfer.

**Medical Chemistry:** Tyson on the Urine, Simon's Clinical Diagnosis, Roberts on Renal and Urinary Diseases.

**Toxicology:** Reese on Medical Jurisprudence and Toxicology, Wormley on Micro-Chemistry of Poisons.

**Materia Medica and Therapeutics:** Bartholow (8th edition), Shoemaker (3d edition), Hare, Wood, United States Dispensatory (1890), Gerrish's Prescription Writing.

**Pathology:** Greene, Warren, Ziegler.

**Bacteriology:** Woodhead, Sternberg.

**Obstetrics:** Lusk, Reynolds, Dorland, American Text-Book.

**Gynæcology:** Diseases of Women, by A. Martin, American Text-Book of Gynæcology, Pozzi.

**Surgery:** Roswell Park's Surgery, American Text-Book of Surgery, Dennis, Treves, Ashurst, Wyeth.

**Practice of Medicine:** Osler, Pepper, Wood and Fitz, Ander's Practice of Medicine.

**Clinical Medicine:** Osler's Practice of Medicine, Wood and Fitz Practice, DaCosta's Medical Diagnosis, Tyson's Physical Diagnosis.

**Neurology:** Gower, Dana, Gray.

**Mental Diseases:** Cloustin, Spitzka.

**Pediatrics:** Holt's Diseases of Infancy and Childhood, Rotch's Pediatrics.

**Otology:** Politzer and Bennett's System of Diseases of the Ear, Throat, and Nose.

**Ophthalmology:** De Schweinitz, Nettleship, Noyes.

**Medical Dictionary:** Dunglison.

### Outline of the Four-Year Course.

FRESHMAN YEAR.

Descriptive Anatomy. Lectures, dissections, and demonstrations.

Physiology. Lectures, demonstrations, and experimental work in the laboratory.

Histology. Lectures and required laboratory work.

General Chemistry. Lectures and required laboratory work.

Final examinations upon these subjects at the close of the first year.

SECOND YEAR.

Pathology. Lectures, demonstrations, and required laboratory work.

Bacteriology. Lectures and required laboratory work.

Applied Anatomy. Lectures and recitations.

Materia Medica and Therapeutics. Lectures and recitations.

Medical Chemistry and Toxicology. Lectures and required laboratory work.

Final examinations upon these subjects at the close of the second year.

THIRD YEAR.

Theory and Practice of Medicine. Lectures and recitations.

Surgery. Lectures and recitations.

Obstetrics, including attendance upon two cases of labor, lectures and recitations.

Abdominal Surgery and Gynæcology. Lectures and recitations.

Pediatrics.

Hygiene.

Final examinations upon these subjects at the close of the third year. Third-year students may also select any of the elective studies of the fourth year for study and examination, for which credit will be allowed them.

FOURTH YEAR.

Clinical Medicine, Clinical Surgery, Ophthalmology, Otology, Neurology, Dermatology, Laryngology, Diseases of the Rectum, Genito-urinary Diseases, Orthopedic Surgery, Mental Diseases, Electro-therapeutics, and Legal Medicine.

The final examinations of the fourth year will consist of three hour examinations upon Clinical Medicine, Clinical Surgery, and two of the following subjects, which shall be elected by the student, and one hour examination on each of the others : —

Ophthalmology, Otology, Neurology, Dermatology, Laryngology, Diseases of the Rectum, Genito-urinary Diseases, Orthopedic Surgery, Mental Diseases, Electro-therapeutics, and Legal Medicine.

### EXAMINATIONS.

There are two examinations held each year, in the college building. They are in writing, and are held at the opening of the regular course of lectures in the fall, and at the close of the course in the spring.

The fall examinations are for

(*a*) Students commencing the study of medicine.

(*b*) Students applying for advanced standing.

(*c*) Students who failed in the spring.

The spring examinations are for promotion and graduation.

All students who intend taking any of the examinations must register their names with the Secretary on or before a date to be announced upon the bulletin.

Students who have failed twice in their examination upon a subject will not be admitted to a third examination without the payment of an extra examination fee of ten dollars.

Students are eligible for their examinations as follows : those of the Freshman year at the close of first year's course ; those of the second year at the close of the second year's course, provided they have passed a majority of the Freshman examinations ; those of the third year at the close of the third year's course, provided they have passed all of the Freshman and a majority of the second year examinations. Those of the Senior year at the close of the fourth year's course, provided they have passed all of the Freshman and second year examinations, and a majority of those of the third year.

# Requirements.

## FOR ADMISSION.

### To the Freshman Class.

(1) An English composition of not less than two hundred words.

(2) The translation of easy Latin prose, or evidence of a familiarity with the derivation of medical terms, and medical and pharmaceutical terminology.

(3) Higher arithmetic, including decimal and vulgar fractions and percentage.

(4) Elementary Physics. An acquaintance with the subject as treated in Avery's or Gage's work.

Students who fail in not more than two of these examinations may be enrolled as conditioned, and will be required to make up the deficiency during the session, before they can be enrolled as students in regular standing.

It is extremely desirable that candidates should have an easy reading knowledge of either scientific German or scientific French.

**Exceptions.** — No entrance examination is required of matriculates or graduates of medical, pharmaceutical, or dental colleges requiring a similar entrance examination, nor of matriculates or graduates of reputable colleges of literature, science, and the arts, nor of graduates of high or State normal schools or of institutions of similar grade, nor of students having certificates of having passed the examination of the Board of Regents of the State of New York. The entrance examination will be held on Tuesday, Sept. 19, 1898, at 3 P. M. at the college.

To save delay, students are requested to bring their diplomas and certificates with them.

### To the Second Year Class.

Graduates of Tufts College who have taken the medical preparatory course, which includes one year of anatomy at the Medical School, and graduates of other colleges or scientific schools in which an equivalent course is given, may complete the work required for the degree of M. D. in three years.

Graduates of literary or scientific colleges who have not taken the medical preparatory course may be admitted to the second year class, but will have to pass the examinations of the first year before they can become candidates for the degree.

Students who have passed a majority of the Freshman examinations may be admitted to the second year class.

### To the Third Year Class.

Students who have passed all the Freshman examinations, and a majority of the second year examinations, may be admitted to the third year class.

### To the Senior Class.

Students who have passed all the examinations of the Freshmen and second year, and a majority of the subjects of the third year, and graduates of other regular medical schools, may be admitted to the Senior class.

## REQUIREMENTS FOR THE DEGREE OF M. D.

Candidates for the degree of Doctor of Medicine in the year 1900 and afterwards must have fulfilled the following requirements: —

1. They must furnish certificates that they are twenty-one years of age, and of good moral character.

2. They must have attended four full courses of medical lectures at some accredited medical college, the last of which shall have been at this school, and no two courses in the same twelve months.

3. They must have passed all the required examinations.

4. They must have attended two cases of obstetrics.
5. They must have satisfactorily dissected one half of the body under the direction of a Demonstrator of Anatomy.
6. They must have paid all fees before the final examinations.

The final marks in all subjects are derived from work in the recitations, laboratory, dissecting room, and in written examinations.

The Faculty reserve the right to change these requirements from time to time without further notice.

The four-years' course commenced with the class of 1900. Candidates for the degree in 1899 must have fulfilled all these requirements, except that three courses of lectures only will be required.

## EXPENSES.

### Freshman Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Demonstrator fee | 5.00 |
| General chemistry laboratory fee | 5.00 |
| Histology laboratory fee | 5.00 |
| General lecture ticket | 100.00 |

### Second Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| Medical chemistry laboratory fee | 5.00 |
| Pathology and bacteriology laboratory fee | 5.00 |
| General lecture ticket | 100.00 |

### Third Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| General lecture ticket | 100.00 |

### Senior Year.

| | |
|---|---|
| Matriculation fee | $5.00 |
| General lecture ticket | 50.00 |
| Graduation fee | 30.00 |

| | |
|---|---|
| Ticket admitting to the four years' lectures (when paid in advance) | $300.00 |
| Instruction in a single branch | 40.00 |
| Graduates of other schools | 50.00 |
| Dissecting material | At cost. |

The matriculation fee, demonstrator fee, laboratory fees, and one half of the general lecture ticket must be paid in advance at the beginning of the year, on or before November 1 ; the second fifty dollars on the lecture ticket is due, and must be paid on or before February 1.

No student will be allowed to attend any course of lectures without the certificate of the Bursar of the College.

The graduation fee is payable on or before the first day of May, and no student will receive a diploma from the College until the Bursar certifies that all fees or charges of any kind are settled.

The Bursar of the College will be at the Medical School for the purpose of collecting fees, a notice of the days and hours being previously posted on the bulletin board.

For the purpose of encouraging thoroughness of medical education, students now connected with the school voluntarily electing to pursue the four-years' course, will be received for the fourth year at a nominal rate.

# General Information.

## LIBRARIES.

The students have free access to the library of the new school, to the Library of Tufts College, and, under certain restrictions, to the Boston Medical Library and to the Boston Public Library, which latter contains a collection of over 15,000 books upon medical subjects.

## SESSIONS OF THE SCHOOL.

The annual course of lectures begins on the third Wednesday in September of each year, and continues until the last Wednesday in May.

The next annual course of lectures will commence Wednesday, Sept. 20, 1898.

## VACATIONS.

There are no exercises at the school during the week of Christmas, Easter, Patriots' Day, Memorial Day, and three days at Thanksgiving.

## STANDING AND CERTIFICATES.

Graduates of other regular medical schools in good standing may receive the degree of this school after attending one course of lectures and passing the examinations of the Senior year. It is understood that attendance upon a course of lectures requires actual presence at a majority of the exercises of the session.

Students who do not wish a degree will be received for any portion of the course. Any student may obtain a certificate of work done during his period of connection with the school. The use of tobacco in the lecture and recitation rooms will not be permitted.

The expenses of living in Boston vary according to the habits and desires of students, and need not exceed those in small cities and villages. Good board, including room, fire, and light, can be obtained near the school at from $4 to $7 per week. Near the school building are several excellent boarding places charging moderate prices. Students will not be allowed to occupy rooms in the city that are not approved by the Faculty.

Requests for the Annual Announcement and all other communications relating to the business of the school should be addressed to the Secretary, CHARLES P. THAYER, M. D., 74 *Boylston Street, Boston, Mass.*

# THE BROMFIELD-PEARSON SCHOOL

# Bromfield-Pearson School.

## BOARD OF INSTRUCTION.

ELMER H. CAPEN, D. D., PRESIDENT.

GARDNER C. ANTHONY, A. M., DEAN,
*and Professor of Technical Drawing.*

FRANK T. DANIELS, A. M. B.,
*Assistant Professor of Drawing.*

CHARLES G. JORDAN, A. B.,
*Instructor in Mathematics.*

SAMUEL C. EARLE, A. M.,
*Instructor in French.*

CHARLES H. CHASE, S. B.,
*Superintendent of Shops.*

———— ————
*Teacher of Forging.*

## STUDENTS.

| | |
|---|---|
| Brown, Clarence E. | *Boston.* |
| Dutcher, Herbert Merritt | *North Cambridge.* |
| McClintock, Edward H. | *North Cambridge.* |
| Towle, Frank B. | *West Somerville.* |
| Tucker, J. Irwin | *Tufts College.* |
| Yeaton, Herbert P. | *West Somerville.* |

# The Bromfield-Pearson School.

This department of Tufts College is designed to provide a special course of technical instruction to such as may be qualified by previous education and maturity of mind to fit for either of the Engineering Courses of the College in one year, or to pursue with equal advantage the special two-years' course of the school.

The first year may be taken as preparatory, either to the Engineering Departments of the College, or to the technical course of the school.

The course for the second year is arranged to meet the wants of those who are unable to pursue their studies for a longer period, but require the essentials of an engineering education presented in a concise and practical manner, to include elementary mathematics, mechanics, and technical drafting.

## ADVANTAGES TO BE DERIVED FROM THE COURSE.

Students who pursue the preparatory course, and complete the work satisfactorily, will be admitted to College on certificate.

Save in the elementary instruction in mathematics and English, the courses pursued are, in most respects, identical with those of the College.

Students who are partially prepared to enter the College may pursue advanced work in anticipation of their engineering studies, and thus shorten their College course.

Students who may pursue the two-years' course, and later decide to enter the College, will receive full credit, by the College, for all work satisfactorily performed which may be equivalent to that required in the Engineering department.

The association with College work and College men places the student in better position to pursue his advanced studies.

The Gymnasium, Library, and Lecture courses of the College are open to students of the school.

The mechanical equipment of the school is such as to afford exceptional opportunities for pursuing the practical courses in Carpentry, Moulding, Pattern work, Forging, and Machine work.

## THE BUILDING.

The Bromfield-Pearson Building is a three-story building 100 by 50 feet, comprising drafting and recitation-rooms, offices, and shops, for conducting the special courses of the school, and the department of drawing and shop work in the College. The drafting-rooms are three in number, and separated from the noise and vibration of the shops. Abundant and uniform light is provided, rooms on the upper floor having large skylights on the northerly side. There is a forge, moulding, pattern, and machine shop. These are equipped with modern tools and in the most approved manner. Each student is provided with a separate bench, tools, forge, lathe, etc. A twenty-five horse power Buckeye engine furnishes the motive power for the shop, and also serves for experimental work in the study of the steam engine. One room is set apart as a study for such of the students as do not room at the College, and for others who desire to prepare their lessons at the building.

# Course of Study.

## FIRST YEAR.

### Preparatory Course.

ALGEBRA is begun, and during the first three-quarters will include quadratics, radicals, arithmetical and geometrical progression, together with the binomial theorem for positive exponents.

GEOMETRY is begun during the first term, and continued throughout the year. The course includes plane geometry and all of solid save spherical geometry.

PLANE TRIGONOMETRY is taken during the fourth quarter.

ELEMENTARY MECHANICS is pursued by the special engineering students during the second term.

ENGLISH GRAMMAR AND COMPOSITION is pursued throughout the year.

FRENCH for the entire year is required of those who are preparing for a College course. Special students may elect French.

DRAWING (Freehand) comprises the course required for entrance to the College, together with technical sketching and lettering.

DRAWING (Technical) includes the use of instruments, geometrical problems, elementary problems in projection (orthographic and isometric), tracing, blue printing, etc. Both this and the course in freehand are identical with the College course in drawing, and all (or a part) may be omitted by students fitting for College.

DESCRIPTIVE GEOMETRY may be taken by such students as are sufficiently prepared to enter the College class. This is pursued during the second term, and is required of those taking the two-years' course.

SHOP WORK is elective, and may be taken at any time when it will not interfere with required work.

### Electives.

Those who are sufficiently prepared in any of the above studies may elect any of the following: —

Preparation in elementary algebra, as above, will admit to course in College algebra.

Preparation in elementary algebra, plane and solid geometry, will admit to Freshman mathematics.

Preparation in elementary mechanics will admit to course in physics, consisting of lectures and laboratory work.

As the instruction in drawing is largely individual, the student may take the grade for which he is prepared.

## SECOND YEAR.

### Special Engineering Course.

This part of the course is intended only for those who do not enter the Engineering Department of the College. Students will, however, be admitted to College classes for which they may be fitted.

ADVANCED ALGEBRA AND SPHERICAL GEOMETRY are pursued with the College classes during the first term.

ANALYTICAL GEOMETRY is taken during the first term.

CALCULUS (Differential and Integral) is studied during the second term. This is elementary, and designed to give the student such a knowledge of the practical use of the science as shall enable him to read, in an intelligent manner, books involving its use.

APPLIED MECHANICS is pursued for one term, and the subjects assigned for design are such as to afford a practical application of the theory. This includes the subject of Graphic Statics.

MACHINE DRAWING. Much attention has been given to the method of presenting this work to enable the student to gain, in the shortest time, a comprehensive knowledge of the practical methods for the graphic representation of mechanical ideas. This work is conducted in precisely the same manner as in a well-organized drafting-room.

It consists largely of freehand sketches and plainly finished drawings, made according to the most approved systems. Each student is now provided with a time card on which a record is kept of the time employed in the execution of all drawings. It is not only necessary that drawings be well made, and accurate, but that a reasonable time be employed in their execution.

KINEMATICS. Under this head, the subjects of cams, gearing, links, etc., are treated, and much stress is laid on the practical application of the same. It is taught by means of graphic problems and lectures.

MACHINE DESIGN is begun as soon as the student has become proficient in the preceding courses, and has acquired neatness, accuracy, and rapidity of execution. He is now encouraged to think and act for himself, thereby developing his intuitive ability and self-reliance. Many of the methods used in connection with this study are believed to be original with the school, and have resulted in a great saving of the student's time.

STEAM ENGINE. A brief course in the theory of steam is pursued in connection with the problems for design of Boilers and Engines. The subject of VALVE GEARS is considered at this time. The student is also taught to apply the INDICATOR and measure the power and consumption of water. Excellent opportunities are afforded at the College for this work which is of the most practical character.

MOULDING. A short but comprehensive course in the foundry is required of all second-year students. The special object in this training is to acquaint the future designer with the methods employed in the modern foundry, and enable him to judge as to the best methods of constructing patterns. This work is of a very practical nature, consisting of the moulding of a great variety of patterns, the making of cores, and, finally, the casting of the more important pieces.

SURVEYING. Such practice in the use of transit and level is afforded the student as shall familiarize him with their use, and enable him to make a simple survey.

## Electives.

The following courses may be pursued in connection with the foregoing, when time and previous preparation will permit: —

PATTERN MAKING. This course includes Carpentry, Turning, Pattern Making, and Moulding. *Six hours a week (first half-year); three hours a week (second half-year).*

FORGING. In this short course it is designed to make the student familiar with the metals and the method of working them. The exercises include heating, bending, drawing, upsetting, welding, tempering, case hardening, etc. *Three hours a week (second half-year).*

MACHINE WORK. Vise work in iron, including surface chipping, squaring and fitting, keyseating, scraping and polishing. The machine practice consists not only in the operation of turning, planing, drilling, boring, etc., but in a careful study of the machines, their efficiency, and capabilities. *Six hours a week (second half-year).*

PHYSICS. (See, under Departments of Instruction, the College of Letters, Physics.) *Three hours a week for the year.*

PHYSICAL LABORATORY. (See, under Departments of Instruction, Physics.) *Six hours a week (second half-year).*

CHEMISTRY. (See, under Departments of Instruction, Chemistry.) *Three hours a week for the year.*

SURVEYING. This is the regular work in Surveying for Engineering students in the Sophomore year. *Four hours a week (first half-year).*

# General Information.

## REQUIREMENTS FOR ADMISSION.

Students will be required to satisfy the instructor in charge of their ability to pursue the studies which they may elect. This may be done by certificate from a school previously attended, or by examination, oral or written, as may be deemed necessary.

In examinations, either for entrance or for advanced standing, the students are considered individually, rather than collectively, in order to give the instructor the fullest knowledge of the standing of the student, and enable the latter to take such a place in the school as shall best fit him for his future work.

## REGULATIONS OF THE SCHOOL.

Students are subject to the rules governing College students.

Prompt and regular attendance, together with a faithful performance of all duties, is required.

Polite and orderly conduct is insisted upon, and any damage to school property must be made good by the student causing it.

Students who may elect any of the subjects in the regular College courses must attain at least seventy per cent. in those studies in order to remain with the class.

No change in program is permitted during the term.

Only such students are encouraged to enter as may be thoroughly in earnest, and desire to make the most of their opportunities. To such, the institution offers exceptional opportunities.

Certificates of proficiency are given the special engineering students who shall complete either of the courses comprised in one year. These certificates state the subjects which have been completed according to the requirements of the institution. No diploma is given, or degree conferred.

The tuition fee is one hundred and twenty dollars per year, payable as follows: Sixty dollars on or before the 5th of October, and the balance on or before the 15th of March.

No part of the tuition fee will be refunded to pupils who for any reason withdraw from the school before the close of the term for which the fee is paid.

Students board in commons at $3.50 per week; in private families at $3.50 to $5.00 for table board and $1.50 to $2.00 for furnished room. Other expenses vary with the economy of each student. Students living in the college dormitories furnish their own rooms.

The following estimates represent the fixed annual expenses: —

| | | |
|---|---|---|
| Tuition | $120.00 | $120.00 |
| Half room-rent | 15.00 | 75.00 |
| Care of rooms | 10.00 | 10.00 |
| Board, $3.50 to $5.00 a week (36 weeks) | 126.00 | 180.00 |
| Physical training | ——— | 10.00 |
| Total | $271.00 | $395.00 |

For other information address, Gardner C. Anthony, Dean of the Bromfield-Pearson School, *Tufts College, Mass.*

# THE SUMMER SCHOOL OF CHEMISTRY

# The Summer School of Chemistry.

## INSTRUCTORS.

FRANK W. DURKEE, A. M.,
*Assistant Professor of Chemistry.*

VIRGIL L. LEIGHTON, A. M., PH. D.,
*Instructor in Organic Chemistry.*

## STUDENTS.

### 1897.

| | |
|---|---|
| Bissell, J. H.<br>Princeton University. | *West Medford.* |
| Capen, Samuel Paul<br>Tufts College. | *Tufts College.* |
| Cousens, John Albert<br>Tufts College. | *Brookline.* |
| Cutler, N. A.<br>A. B., Amherst College. Principal Baldwinsville High School. | *Baldwinsville.* |
| Lawrence, E. B.<br>Teacher of Science, New London High School. | *New London, Conn.* |
| Marsh, Frederick Charles<br>Tufts College. | *Greenville, N. H.* |
| May, Benjamin Dexter<br>Tufts College. | *Hudson.* |
| Meader, Edgar Keene<br>Tufts College. | *Marblehead.* |
| Osborne, Arthur Decatur<br>A. B., Amherst College. Tufts Medical School. | *Somerville.* |
| Owen, L. H.<br>A. B. Principal Woburn High School. | *Woburn.* |
| Plumb, Max Alaric<br>S. B., Tufts College, 1897. | *Rocky Hill, Conn.* |
| Rees, R. B.<br>University of Vermont Medical School. | *Burlington, Vt.* |
| Smith, Preston<br>Instructor in Science, Fitchburg Normal School. | *Fitchburg.* |
| Whitman, Walter George<br>Tufts College. | *Norway, Me.* |

# The Summer School of Chemistry.

## THE GENERAL PLAN.

The Summer School of Chemistry was opened in 1897, in charge of Assistant Professor Durkee. The success of the session seemed to warrant its continuance. Six of the regular college subjects, Chemistry 1, 2, 3, 4, 5, and 10 (see pages 89 and 90), are offered. Each subject will have allotted to it the same number of lecture and laboratory periods that are provided for in the regular college curriculum. When satisfactorily completed the term hours which they represent can be counted towards the number required for a degree. Subjects 1, 4, and 5 represent six term hours each, and 2, 3, and 10, three term hours each. The school, therefore, offers exceptional advantages to students of the College who wish to graduate in three years, as well as to students who wish to make up conditions or to lighten a subsequent year's program by working off their chemistry in advance. Applicants for admission to the College in the fall, who wish to offer chemistry for an entrance credit, can do the required work in the school, if not previously prepared for an examination. The school, furthermore, provides an opportunity for teachers in secondary schools to obtain a teaching knowledge of general inorganic chemistry and to carry forward the study of chemical analysis.

The Chemical Building is well equipped with lecture room, laboratories, and modern apparatus for all kinds of chemical work.

## EXPENSES.

Tuition for Chemistry 1, $20; for Chemistry 2 and 3, $20, or $12 for one of the two subjects; Chemistry 4, 5, and 10, $15 each. The cost of chemicals for each of the subjects 1, 4, and 5 is $8, and $4 each for 2, 3, and 10. Breakage depends entirely upon the care of the student, and averages about $4 in each of the longer courses. Board and furnished rooms can be obtained for $6 a week, and board near the chemical laboratory for $3.50 a week. Tuition and cost of chemicals must be paid on the first day of the term.

All communications relative to the Tufts College Summer School should be addressed as soon as possible to

FRANK W. DURKEE, *Tufts College, Mass.*

# THE COLLEGE EXTENSION DEPARTMENT

# The College Extension Department.

## EXECUTIVE BOARD.

ELMER H. CAPEN, D. D.,
PRESIDENT *of the College.*

EDWIN A. START, A. M.,
DIRECTOR *of the College Extension Department.*

HERBERT E. CUSHMAN, A. M., PH. D.,
SECRETARY *of the College Extension Staff.*

GEORGE T. KNIGHT, A. M., D. D.

## THE GENERAL PLAN.

The College Extension Department offers courses of consecutive lectures in series of five and ten, to be given by members of the regular corps of instruction of Tufts College. It is the object of the work to bring to those who are not able to avail themselves of the regular resident work of the College, or to college graduates who wish to keep in touch with college influences, some of the results of modern thought, some currents from the stream of which the College is the reservoir. It does not propose any substitute for a college course, nor is it intended to make easier the hard road of learning. It does extend to a large class in the community opportunities which cannot exist apart from such work by the College, and hopes thereby to bring the College into closer relations with the community at large.

The courses of lectures offered will form the main body of the work. While the lecturers will aim to interest their hearers, the purpose is to instruct rather than to entertain. Syllabi can be obtained in connection with each course. These syllabi will contain outlines of the courses and references and suggestions to guide reading and study in connection therewith. In connection with many of the courses supplementary work may be done, when desired, by members of classes under the lecturer's direction. A provisional list of courses at present announced follows.

## THE EXTENSION LECTURES.

### ENGLISH LITERATURE.

1. — A review of English poetry from Chaucer to Tennyson. *Five lectures.* PROFESSOR MAULSBY.

2. — Shakespeare. A study of four plays, representing four stages in the author's growth, followed by a sketch of Shakespeare as man and dramatist. *Five lectures.* PROFESSOR MAULSBY.

3. — The Romantic movement in England, with special reference to Byron, Shelley, Keats, Wordsworth, and Coleridge. *Five lectures.* PROFESSOR MAULSBY.

4. — The development of American literature. Bryant, Hawthorne, Poe, Longfellow, Whittier, Lowell, Emerson, Holmes, Whitman. *Ten lectures.* PROFESSOR MAULSBY.

Professor Maulsby's courses, as announced above, may be engaged for the college year 1898–99, but not for the current year.

### GREEK HISTORY AND LITERATURE.

1. — The Greek Tragic Drama, with reading of translations and parallel readings. *Five lectures.*

ASSISTANT PROFESSOR WADE.

### ROMAN HISTORY AND LITERATURE.

1. — Ancient Roman Life. Such subjects as the following may be treated: the house, family, daily life, dress, education, slavery, agriculture, trade, careers, amusements, religion, books, and libraries. *Five or ten lectures*, as desired.

ASSISTANT PROFESSOR DENISON.

### HISTORY AND GOVERNMENT.

1. An Introduction to the Science of History. This course is designed to be of assistance to readers and students of history who have not had guidance in scientific methods. The lectures will deal with the nature, meaning, and method of history, its beginnings, and some of the chief elements that enter into its course. *Five lectures.*

ASSISTANT PROFESSOR START.

2. The American Revolution. A study of causes, forces, and results. *Five lectures.* [Not to be given before 1898–99.]

ASSISTANT PROFESSOR START.

3. Comparative Politics. The fundamental principles of the science of politics, and their application in typical constitutions, especially in those of France, Germany, Switzerland, England, and the United States. *Ten lectures.* [Not to be given before 1898–99].

ASSISTANT PROFESSOR START.

4. History of Religions. The great non-Christian systems: of Egypt, Chaldæa, Hindustan, China, and Japan; of Gautama Buddha, Zoroaster, and Mohammed. *Five lectures.*

PROFESSOR KNIGHT.

ECONOMICS.

1. Political Economy. A presentation of the fundamental principles of economic science. *Ten lectures.*

MR. HAMILTON.

PHYSICS.

1. Electricity in theory and practice. The subject will be treated in a general way, with a desire to direct study in the several fields and not to give the equivalent of class-room instruction. Such topics will be treated as electric lighting, the storage cell, electrical instruments, power transmission, street railway work, and miscellaneous applications. *Ten lectures.* MR. H. G. CHASE.

ENGINEERING.

1. Principles of the Steam Engine. *Ten lectures.*

MR. SANBORN.

2. The Steam Engine Indicator. *Five lectures.*

MR. SANBORN.

HEALTH AND ITS PRESERVATION.

A course of ten lectures is offered by members of the Faculty of the Medical School. It comprises lectures upon surgical emergencies and the care of the injured; general hygiene; infant hygiene and the care of children; the chemistry of cooking; the chemistry of food, bacteriology, physiology, etc. A number of subjects are included, each one treated by a trained specialist, and selections may be made from the list by those arranging for the course.

ANATOMY.

1. Human Anatomy. Particulars in regard to this course may be obtained of the Director. PROFESSOR THAYER.

## History of Philosophy.

PHILOSOPHY.

1. Ancient Philosophy. Religious period of Greece; early phi-

losophy, the Sophists and Greek culture; Socrates, Plato, Aristotle, Democritus, and Greek science. *Ten lectures.*

DR. CUSHMAN.

2. History of the Astronomical Idea of our Universe. *One lecture.*

DR. CUSHMAN.

3. Curious Evolution Theories. *Two lectures.*

DR. CUSHMAN.

4. History of Rational Protestantism. A popular presentation of the problems as discussed by Descartes, Spinoza, and Leibnitz. *Five lectures.* DR. CUSHMAN.

5. History of Scepticism from Hobbes to Hume. *Five lectures.*

DR. CUSHMAN.

6. History of Idealism from Kant to Hegel. *Ten lectures.*

DR. CUSHMAN.

7. Modern Evolution. *One lecture.* DR. CUSHMAN.

### Psychology.

8. The Contents of the Mind,— memory, imagination, sensation, etc. *Ten lectures.* DR. CUSHMAN.

### Ethics.

9. The Ethical Life,— with the problems of free will, conscience, duty, rightness, God, immortality, evil. *Ten lectures.*

DR. CUSHMAN.

BIOLOGY.

1. The Animal World of To-day. Illustrated by diagrams and blackboard sketches. *Five lectures.*

PROFESSOR KINGSLEY.

MUSIC.

1. General History of Music, with especial reference to the development of modern music. This course can be made up of *ten*, *fifteen*, or *twenty lectures*, according to the ground which it is desired to cover. PROFESSOR LEWIS.

2. Harmony. A course of advanced study for those who are already familiar with the theory and terminology of Harmony. *Ten lectures.* PROFESSOR LEWIS.

Courses, the announcements of which are not yet ready, will also be given by Mr. Whittemore in the field of English

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The regular fee for lecture courses is *sixty dollars* for courses of five lectures, and *one hundred and ten dollars* for courses of ten lectures. When illustrated lectures are given an additional charge will be necessary. The expenses of lecturers will also be charged to classes.

All bills are payable to the Director. Fees are due one half at the opening of a course and one half at its close.

All correspondence relative to the College Extension Department should be addressed to the *Director*, who will give advice and assistance in the organization of classes, and will furnish detailed information in regard to specific courses.

Address, *The Director of the College Extension Department*,
Edwin A. Start,
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# DEGREES AND HONORS

1896–97

# Forty-First Annual Commencement.

JUNE 16, 1897.

## DEGREES CONFERRED.

### Honorary.

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SAMUEL GREELY HILBORN.
HOSEA MORRILL KNOWLTON.

DOCTOR OF DIVINITY.

FREDERICK ADELBERT BISBEE.

DOCTOR OF PHILOSOPHY.

FRED GOWING.

MASTERS OF ARTS.

FREDERICK FROTHINGHAM BURGIN.
ARTHUR JOHN FINN.

### In Course.

BACHELORS OF ARTS.

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HELEN ELIZABETH BROWN (*with Final Honors in Greek and Honorable Mention in Latin*).
JOHN McARTHUR BUTTERFIELD (*with Honorable Mention in Latin*).
JOHN BOYNTON WILSON DAY (*with Final Honors in English Literature*).
FLORENCE GERTRUDE DYER (*with Final Honors in Latin and German and Honorable Mention in French and English Literature*).
FRANK RANDALL GALE (*with Honorable Mention in Philosophy*).
LUCIE MARION GARDNER.
CHARLES BODEN GREEN.
ERNEST JOHN HEWITT (*with Honorable Mention in English Literature*)
GEORGIA LOUISE HODGDON (*with Final Honors in Mathematics*).
EDITH LOUISE HODGE (*with Honorable Mention in English Literature*).
ARTHUR AMES HODGMAN.
JOHN WELLINGTON KNOWLTON.
WARREN STONE PARKS (*with Honorable Mention in Political Science*).
CARLTON ALBERT PERRY (*with Honorable Mention in Political Science and History*).
ROLLIN BREWSTER SANFORD (*with Honorable Mention in Greek, Political Science, and English Literature*).

ALARIC BERTRAND START (*with Final Honors in History and Honorable Mention in Biology*).
WINTHROP WARNER WHITE (*with Final Honors in Mathematics and French*).
FRANKLIN BATES WILLIAMS (*with Final Honors in German and Political Science and Honorable Mention in Physics and Music*).

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HORACE AMOS DAVIS (*with Honorable Mention in Music*).

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## AWARDS OF PRIZES, 1896-97.

### Goddard Prize in Latin.

MORTON ADAMS STURTEVANT.

### Goddard Prize in Mathematics.

ELIZABETH CALDWELL LANE.

### Greenwood Prize Scholarship in Oratory.

ERNEST JOHN HEWITT.

### Rhetorical Prizes.

*First Class* — (1) NOT AWARDED.
(2) KATE ELIZABETH COUSENS.
*Second Class* — (1) GRACE EVELYN GOUDEY.
(2) SIMEON CONANT SMITH.
*Third Class* — (1) ROLLIN BREWSTER SANFORD.
(2) WILLIS ALBERT MOORE.

### Entrance Examination Prizes, 1897–98.

ROGER WELLINGTON ARMSTRONG and ANNA IMELDA RYAN.

### Greenwood Prizes in Oratory in the Divinity School.

HERBERT ELMON BENTON, FANNIE ELMINA AUSTIN, and WILLIAM JOHN TAYLOR.

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